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NEWS IN BRIEF

Japanese meet CSA

A DELEGATION from the Office Automation Group of the Japanese electronics industry has had discussions with the CSA on word processing, electronic mail, and teleconferencing, in order to exchange views on developments in the two countries.

The Japanese were apparently surprised at the systems approach to office automation taken in Europe, involving the whole organisation and the way in which information flows, unlike the Japanese approach that is concerned largely with equipment.

Traffic control

TRAFFIC conditions in Belfast will soon be monitored and controlled by an urban traffic system from Plessey Controls of Poole, Dorset. Placed by the Department of the Environment for Northern Ireland, the order for the installation of 110 traffic signals, 25 Pelican pedestrian crossings, and 30 special detectors.

Future with micros

THE controversial report from Sussex University Science Policy Research Unit on the social impact of microelectronics, written by Iann Barron and Ray Currow (CW, October 5, 1978) has now been published. Under the title of "The future with microelectronics," it is available as a 243 page book from Frances Pinter Ltd at £7.95.

Offices shut

THE Local Authorities Management Services and Computer Committee is to close four of its regional offices in order to concentrate more resources on research at a national level.

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The new HPAC CORAL 66 compiler has been considerably improved and incorporates the EXTERNAL link-by-name facility to ensure compatibility and mutual interfacing with the HPAC FORTRAN 77/66 compiler. Both compilers produce code which is re-entrant and will run under RTX-4.

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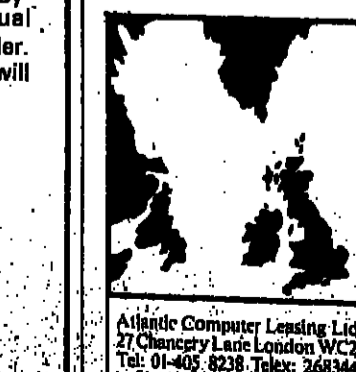
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Tour de force

THE fourth round of the European touring car championships, which attracted a big entry to the Brands Hatch circuit in Kent, was sponsored by Générale de Service Informatique UK, the British branch of the French-based GSI group.

Here, Tony Cavender (right), chief executive and managing director of the UK operation, hands the GSI trophy to the winning team of Pierre Dieu Donne, Jean Xhenceval and Raymond van Hove.

Pentagon picks European real time language

THE US Department of Defence has chosen the European design prepared by CII-Honeywell Bull for its future real time language Ada.

Widely known as the "green" language after the colour coding previously adopted to ensure anonymity, the Honeywell design has for some time been regarded as the better technical candidate. It was however questionable whether a European design would be found politically acceptable.

Although nominally contracted to the Honeywell Systems and Research Centre in Minneapolis, nearly all the development so far has been the responsibility of a CII-Honeywell Bull team working in Paris.

The DoD's choice therefore represents a considerable accolade for European expertise.

The decision, announced exactly on schedule on May 2, also scotches fears that the DoD project would defeat much of its purpose by spawning not one but two new standard languages.

Had the other remaining candidate, "red," been selected, the

Honeywell design might well have been adopted unilaterally in Europe — if not as a complete alternative to Ada, then at least as the European Systems Language (ESL).

With the choice having fallen on green, work by the competing "red" contractor, the US software house Intermetrics, will now almost certainly cease.

Very considerable interest has focused on the successive stages in the definition of Ada, which was for a long time referred to as the Ironman language after the name of the penultimate requirements specification.

Despite being intended primarily for defence applications,

it is likely to be very widely adopted for real time programming in general. In this, it will get a major boost from the DoD itself, which in its own interest intends to make compilers and other software "widely and cheaply available."

All of this, though, is still some way off. As the next stage of the project, the DoD has planned a series of workshops at which existing programs will be recoded in Ada as a test of the design.

The design will then be refined in the light of this experience, with the aim of producing a final language definition early in 1980.

Ada will at this point be added to the DoD list of approved languages.

A further lengthy delay will then be inevitable while working compilers are developed. Honeywell itself has so far only developed a prototype interpreter for Ada, admitted by all who have looked at it to be a large language.

Further work also remains to be done on the specification and development of standard programming and support tools for which the DoD has issued a parallel series of requirement documents under the successive names Sandman and Pebleman.

Times keyboarding proposal

PROSPECTS for a settlement at The Times have improved following a compromise proposal by management that represents a substantial climbdown over its former position on the operation of new computer equipment.

Discussions are now going on over management's offer to have all text input done by National Graphical Association members, so long as the NGA agrees to journalists doing sub-editing directly on terminals.

This arrangement would probably be for a fixed trial period of 2½ years, after which the situation would be reviewed by both sides. Although the NGA has been adamant that no one but its members should be allowed to touch keyboards, it may well agree to a deal such as this if only because the computer system could not be operated practically if sub-editors had no access to screens.

These suggestions leave unsolved the problem of keyboarding by advertising staff, who are not journalists but members of another print union, Natsopa. Negotiations between The

Times and Natsopa over other issues such as disputes procedures and manning levels are still causing difficulties.

A deal with the NGA along the lines proposed may well lead to serious difficulties in implementation, by making operations inflexible and by introducing uncertainty over which journalists are sub-editors and which are not.

Production of the weekly European edition of The Times was abandoned after the printing of a few thousand copies, owing to violence by pickets outside the printing plant in Frankfurt and threats of further violence. There will be no European edition this week, but publication may be resumed if management succeeds in its efforts to find another printer.

The picketed printer, TER Druckerei, is a non-union shop but nonetheless the West German print union, IG Druck, had organised between 200 and 300 pickets who were joined, according to police, by a good number of political activists.

The Hessen Newspaper Publishers' Federation is prose-

cuting three union officials for trespass and uttering threats and menacing, and other "persons unknown" for attempted arson and damage to property.

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SRG offers Cray 1 service

SCIENTISTS in the UK may have access to a Cray 1 computer installed by the Science Research Council, Daresbury Laboratory, Cheshire.

The Cray 1, which is rented from Cray Research, is originally installed at a European Centre for Molecular Range Weather Forecasting, Shinfield Park, Reading, but it was replaced by another Cray 1.

The SRC says that it is making bureau services available to scientists on the Distributed Array Process being installed at Queen Mary College in London.

Application areas for the super-computers include astrophysics, molecular physics, and solid state physics and protein crystallography.

PO dispute

UNION action within the Office computer centres (May 3), has continued to effect despite a new pay offer made last week. It would be given an increase of 8% on the board plus a restructuring of pay scales which itself would have added another 3% to some salaries. This was rejected.

THE Danish government has joined the queue of companies and institutions anxious to ensure that local computer manufacturer Regnecentral remains in business (CW, May 10). The government is determined that the company remain in Danish hands, and is considering additional orders for Regnecentral and financing joint development projects.

Briefing

Three times faster

NEW Josephson Junction microcircuits developed by IBM, operate three times faster than those hitherto announced, by use of a technique called current injection logic, which uses injected currents as well as magnetic fields to switch the circuit.

Two circuits are connected by a superconducting inductance, enabling "and" and "or" gates to be constructed. Devices so far built have from two to eight inputs and from one to six outputs, with a minimum operation time of 13 picoseconds.

Calcomp sells out

HAVING sold most of its disc drive manufacturing interests to the Diablo subsidiary of Xerox, the rest of plotter specialist Calcomp is being bought by Saunders Associates in a \$45.9 million takeover. Calcomp has connections with two European companies in the UK, SPL is writing graphics software for the IGS 500 terminal under an Inspec contract, and SEMS of France is supplying Calcomp with Solar 16 minis for use in graphics terminals.

Danes help

THE Danish government has joined the queue of companies and institutions anxious to ensure that local computer manufacturer Regnecentral remains in business (CW, May 10). The government is determined that the company remain in Danish hands, and is considering additional orders for Regnecentral and financing joint development projects.

999 speed-up

TO speed up response times to 999 calls, the Metropolitan Police is installing a command and control system called Computer Aided Despatcher which will cover the whole Metropolitan area by the mid 1980s.

Cobol contract

INTEL has confirmed the contract with Micro Focus for the latter's CIS Cobol compiler, which will be marketed worldwide by Intel as part of a new Vendor Supplied Product Programme (CW, May 3).

Fujitsu models

THE low end of Fujitsu's line of M-series mainframes has been recast to meet competition from IBM's 4300 series. New M-100, 140, 150 and 160 F-series models have been announced, with 64K memory chips. The M-100 is claimed to be 1.6 times the power of the 4331 at the same price, and the 160F to be 1.5 times as powerful as the 4341 at 75% of the price.

Dattek deal

THE UK phototypesetting equipment manufacturer, Dattek Systems of Wembley, has signed an agreement with Linotype under which the latter will market the Dattek 7000 series on a worldwide basis.

COMPUTER WEEKLY
Number 653 Thursday, May 17, 1979 Price 18p

Ambassador at Compec

The British Ambassador to Belgium, Sir Peter Wakefield, visited the Computer Weekly stand at last week's Compec Europe exhibition, held at the Centre International Rogier in Brussels, attracting more than 6,200 visitors — an increase of over 10% on the 1978 attendance.

Sir Peter (left) is seen here discussing Computer Weekly, Europe's most widely read computer newspaper, with Chris Hipwell, editorial director (centre) and Chris O'Hea, assistant advertisement manager.

Report and more pictures — Page 16/17.



Thatcher axe over NEB firms

TORY plans to restrict the operations of the National Enterprise Board were confirmed in the Queen's Speech and measures to amend the 1975 Industry Act, under which the NEB was set up, will be among the early legislation to be considered by the new Parliament. Until this is resolved the future of computer-related projects such as Inspec, Inmos and Nexos will be under a shadow of uncertainty.

NEB chairman Sir Leslie Murphy and Industry Secretary Sir Keith Joseph, have already started talks on the future of the NEB and these are expected to continue into the autumn.

If the board has to sell off all its computer interests, the prospects of Inmos finding alternative backers seem the least hopeful, while Inspec, the international software marketing consortium, could be acquired by an as yet unnamed organisation

believed to be interested in buying the company intact (CW, May 10).

Inspec members are less worried about the prospect of the NEB selling off its shares in them than they are by the possibility of Inspec itself being wound down. A spokesman for Systems Designers said that the demise of Inspec would be "terribly sad" because of the need

● Turn to page 25

Insac going well in US

INSAC's efforts to sell viewdata systems in the US are going well. Letters of intent for 80 systems have been received from US firms, mainly tour operators and banks. Home banking, whereby the general public can dial their banks and transact business from their sitting rooms, is causing great interest.

An agreement between Inspec and a large US company over marketing viewdata there is expected soon. The US company will probably be GTE (CW, January 28).

According to John Pearce, Inspec managing director, several large US corporations are thinking of buying viewdata systems for closed user groups, for internal use. Pearce feels that the most money to be made at this early stage in viewdata's history is in closed user groups, not with the domestic market which the UK Post office has entered.

Opportunity for UK lead in Ada development

EMPHASISING that the UK aims to stay at the forefront of Ada technology, the Ministry of Defence has let a joint contract to Systems Designers and Software Sciences to study the implications of Ada for the software support environment.

Including integrated tools for program design, testing, and maintenance, this area has already been addressed in outline by the DoD's Pebleman specification. US work in this field, though, appears to have taken second place to the race to define the language itself.

An opportunity may therefore exist for the UK to establish a lead, building in particular on experience with Mascot.

Although Mascot itself is unlikely to support Ada, the support it provides is seen as broadly similar to that called for by Pebleman and it aims at exactly the same problems of software development and ownership.

Speaking about UK experience with Mascot as a standard, an SDL spokesman described it as an effective interim solution. Developments using Coral and Mascot were likely to continue till between 1989 and 1990, he said, with Ada

INSIDE THIS WEEK'S CW

DATA COMMS FUTURE

Although the development and application of the micro has taken a big share of the limelight over the past months, data communications are likely to have as wide an impact as any other computer related development over the next five years. This week's special section reviews various aspects of data communications including the growth of viewdata. Pages 19/23

SOLID STATE SANTA

For the hard nosed business fraternity, Santa's next delivery will doubtless be the development of many of the toys and gadgets which will be micro-driven. From New York we report on some of the latest devices. Page 24

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JOB VACANCIES: PAGES 28-63

Univac likely to be first with bit-slice mainframes

HAVING revolutionised the minicomputer world, the bit-slice microprocessor is about to do the same for mainframes, and the first company to introduce a high performance bit-slice mainframe is likely to be Univac.

The company is ready with a replacement for the 1100/40, 1108 and 1106, offering performance of over one million instructions per second based on the Motorola 10800 4-bit bit-slice microprocessor. The performance is achieved by having more than one full 38-bit processor running in parallel in each CPU.

The 10800 is a member of Motorola's MECL-10K emitter-coupled logic family, and is claimed to be capable of executing a 16-bit "add" execution in 41 nanoseconds.

Its adoption by Univac for the 1100/60 marks a number of firsts. It is believed to be the first time that a mainframe manufacturer has used bit-slice technology in a machine of this power; the only other bit-slice mainframe being the small and comparatively low-power Digital Equipment DECsystem-2020.

It is also believed to be the first bit-slice emulation of a 36-bit word machine to be offered on the commercial market. Several companies, including Two Pi and National Semiconductor, do bit-slice emulations of the 32-bit IBM 370 line, but these machines are designed more for low cost than high performance.

The CPU on the 1100/60 uses nine of the four-bit 10800s to get the 36-bit word width; the machine addresses a maximum of two Megawords, equivalent to nine Megabytes.

It will also be fitted with an 8K word cache; previously only the 1100/80 has had cache memory, and marked the switch at Univac from main and ex-

● Turn to Page 24

Fairchild and Gould go to court

SINCE Fairchild's rejection of a takeover bid by Gould (CW, May 10), both companies have become involved in litigation. Gould has filed a suit in Chicago alleging violation of federal securities laws in Fairchild's public conduct and statements.

Fairchild has filed a suit in New York alleging that the combination of Fairchild and Gould would violate federal anti-trust laws, and that Gould violated the disclosure provisions of federal securities laws.

First quarter earnings for Fairchild were up 23% to \$7,056,000 over the corresponding period last year, while earnings per share jumped 20%.

£400,000 order

HONEYWELL has been awarded a £400,000 contract for a 6080 mainframe to replace two Elliott 4130s at University College, Aberystwyth.

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The banks have hardly en-
hanced their computing image with the troubled SWIFT
project. Even the buzzy bird would
hesitate to publicise this particular
endeavour.

Just why the DP department
allows itself to become tangled in
the communication wires, is
difficult to define. Often it fol-

lows prodding from senior com-
pany management, keen to keep
pace with competitors. This en-
thusiasm, however, often wanes
when the bills start piling up. In
many cases, the DP team itself
may have become restless and
started seeking new challenges.
If so, it would be far better for all
concerned if this energy was
channelled into the Computa-
tories contest rather than into DP
communications networks.

Sometimes, it is the DP
management team which swal-
lows the sales message that
database communication sys-
tems are loaded with advantages
for the organisation. Such
mixing and matching of data,
however, is often more relevant
to the sportswear department of
Moss Bros than to the average
DP department.

Advantages are probably
loaded against the DP installa-
tion. While it is true that the
basic cost of terminals and
associated hardware is falling,
the cost of getting this particular
show on the road is fast escalat-
ing. DP talent and expertise in
these areas are strictly limited

NOBODY knows why the
dinosaurs died. But die out they
did. The fact that some of the
larger species appear to have
had a secondary "brain" at the
other end of their spinal column
suggests that their peripheral
handling capabilities were not
all they should have been. But
the fact remains that the evolu-
tion of the dinosaur was ended
by a discontinuity, the nature of
which has never been satisfac-
torily explained.

Little as we know about this
phenomenon, it is reasonable to
suppose that an inability to re-
spond to the challenge posed by a
significant environmental
change — whether in terms of
climate, or food supply or some
other factor — was, in the ab-
sence of man, the root cause of
their extinction.

It is, of course, always possible
to push analogies too far, but the
news that IBM's General Systems
Division has opened a computer
store in Rotterdam, (CW, May 3) having already
opened 48 retail stores in the US,
suggests that some fairly far-
reaching changes are occurring
in the computer world.

Whether one regards main-
frame systems as the dinosaurs
of the computer world and
machines such as the IBM 5110,
which will be sold in the new
computer store, as precursors of
the warm-blooded mammals
which will replace them is, to say
the least, debatable.

However, one only has to
consider a mainframe system

Communication wires tangled with the DP department

THERE is no surer way of get-
ting up-the-creek, with or with-
out a data paddle, than moving
into the advance level world of
database communications. Auditors
have been known to resign
assignments rather than under-
take the communication trail lead-
ing into the depths of ill-
defined system technology.

It would be far more practical
if all such communication routes
led straight back to the equip-
ment supplier. All too often,
communication disasters are the
result of over-keen salesmen,
promoting ambitious and non-
proven systems.

Not so long ago, database and
related communication systems
were regarded as being the
biggest non-event in computing.
Time hasn't changed the views
of many. The present State of
the Art leaves much to be de-
sired with only a marginal swing
towards successful implementa-
tion. If the computing reputa-
tions of the major banks and
State industries are any guide,
much of the computing industry
would have been better advised
to stick to basic processing.

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ing. DP talent and expertise in
these areas are strictly limited

The dinosaurs will be with us for a while yet

which has been in operation for
a few years, to realise how un-
wieldy and unresponsive the
monster is: I write as a frustra-
ted user.

The machine, in its air-
conditioned enclosure, has to
function in accordance with an
ever-changing and ever-
growing operating system
which constitutes a significant
overhead in terms of the com-
puter's overall performance.

To enable the central proces-
sor to get on with a bit of pro-
ductive work now and again, the
really sophisticated installations
— particularly those which ser-
vice networks of terminals —
may have a front-end processor,
and there are even back-end
processors and specialised data-
base processors, the function of
which is to relieve the load on
the system's increasingly over-
burdened brain.

The needs of this monster are
catered for by customer engi-
neers, computer operators and
programmers and a proportion
of the latter will be engaged in

maintaining existing software,
to ensure that the whole thing
does not come to a grinding halt.

Of course, these unwieldy
and unresponsive systems will
not disappear overnight. Unlike
the dinosaur, they represent a
significant investment in terms
of hardware, software and
training, and their continued
existence is therefore guaran-
teed — for a time at least.

The question posed by the
minicomputer, the microcom-
puter and the host of new sys-
tems which are cheap enough to
be dedicated to specific applica-
tions rather than used as a
general purpose computing sys-
tem, is how long that time will
be.

One can only conclude that
mainframes will continue to
exist as number crunchers, at
the heart of computer networks
and so on, but that the overall
customer base of mainframe in-
stallations will gradually be
eroded as more responsive,
easily-used systems become
available to the man-in-the-

street or, at least, the
businessman-in-the-street.

At the same time the micro-
processor will enable computing
facilities to be incorporated easily
and cheaply in other equip-
ment so that computing power
will become an accepted feature
of everyday life in much the
same way that electricity and
the telephone are accepted
today.

So the dinosaurs will be with
us for a while yet. I would cer-
tainly not be in IBM's interest to
make them obsolete overnight.
Equally, IBM is nothing, if not
responsive to market forces and
it has shown by its product an-
nouncements, by the re-
structuring of its divisions and
such moves as the opening of
computer stores, that it is not
going to leave the small com-
puter market to the Texas In-
struments and Tandys of this
world.

One thing is certain, computer
technology being what it is: the
new systems will be smaller,
more approachable and more
responsive to our immediate
computing needs than the
mainframe ever was.

So, roll on the evolution.

One can only conclude that
mainframes will continue to
exist as number crunchers, at
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responsive to our immediate
computing needs than the
mainframe ever was.

So, roll on the evolution.

One can only conclude that
mainframes will continue to
exist as number crunchers, at
the heart of computer networks
and so on, but that the overall
customer base of mainframe in-
stallations will gradually be
eroded as more responsive,
easily-used systems become
available to the man-in-the-

street or, at least, the
businessman-in-the-street.

At the same time the micro-
processor will enable computing
facilities to be incorporated easily
and cheaply in other equip-
ment so that computing power
will become an accepted feature
of everyday life in much the
same way that electricity and
the telephone are accepted
today.

So the dinosaurs will be with
us for a while yet. I would cer-
tainly not be in IBM's interest to
make them obsolete overnight.
Equally, IBM is nothing, if not
responsive to market forces and
it has shown by its product an-
nouncements, by the re-
structuring of its divisions and
such moves as the opening of
computer stores, that it is not
going to leave the small com-
puter market to the Texas In-
struments and Tandys of this
world.

One thing is certain, computer
technology being what it is: the
new systems will be smaller,
more approachable and more
responsive to our immediate
computing needs than the
mainframe ever was.

So, roll on the evolution.

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NOBODY knows why the
dinosaurs died. But die out they
did. The fact that some of the
larger species appear to have
had a secondary "brain" at the
other end of their spinal column
suggests that their peripheral
handling capabilities were not
all they should have been. But
the fact remains that the evolu-
tion of the dinosaur was ended
by a discontinuity, the nature of
which has never been satisfac-
torily explained.

Little as we know about this
phenomenon, it is reasonable to
suppose that an inability to re-
spond to the challenge posed by a
significant environmental
change — whether in terms of
climate, or food supply or some
other factor — was, in the ab-
sence of man, the root cause of
their extinction.

It is, of course, always possible
to push analogies too far, but the
news that IBM's General Systems
Division has opened a computer
store in Rotterdam, (CW, May 3) having already
opened 48 retail stores in the US,
suggests that some fairly far-
reaching changes are occurring
in the computer world.

Whether one regards main-
frame systems as the dinosaurs
of the computer world and
machines such as the IBM 5110,
which will be sold in the new
computer store, as precursors of
the warm-blooded mammals
which will replace them is, to say
the least, debatable.

However, one only has to
consider a mainframe system

90 nanosecond static RAM

A JAPANESE company, the
Electric Industry, has intro-
duced a 16K bit static RAM. The
features an access time of
90 nanoseconds.

Called the MSM 2128, the
chip is organised as 2K by 8 bits,
is mounted in a 24-pin package.
State-of-the-art 3 micron
geometries are used. So far, only
small quantities of the chip have
been produced by OKI, as
customer sampling is not ex-
pected to start until September.
Full production is scheduled for
the first quarter of 1980.

Muirhead looks like soon
joining Logica as the second
associate of the National Enter-
prise Board's office technology
venture, Nexos, according to
remarks made last week by the
NEB chairman, Sir Leslie
Murphy.

Sir Leslie told Computer
Weekly that negotiations with a
second, though unnamed, firm
to join Nexos were nearing
completion.

However, Muirhead and
Nexos have confirmed that
negotiations between the NEB
and Muirhead are proceeding
and Muirhead, managing
director of Nexos, said that he
hoped an agreement would be
signed soon.

A Muirhead spokesman
pointed out that if a deal were
made with the NEB it would
involve Muirhead and the NEB
each taking a share in a new
office equipment enterprise,
rather than the NEB taking a
share in Muirhead.

The deal would involve the
facsimile transmission equip-
ment side of Muirhead's busi-
ness, and would not affect the
rest of Muirhead operations.

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ment function and concentra-
tion of operational subsidiaries
into specialist areas.

A joint Anglo-Dutch CMG
group head office based in the
UK and in Holland has been
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appointment of Nick Schofield
and Cor Stutterheim. They were
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managers of the UK and Holland
and now become jointly re-
sponsible for CMG management
worldwide.

Subsidiary companies in Hol-
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there are now four companies
instead of three. CMG Rotter-
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One of the main purposes of
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Other founding members of
ICUA include British Aerospace
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at Preston, and Unilever Com-
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customer in the UK.

The first meeting of the ICUA
committee will be held at CIS in
Manchester next week.

ICUA should contact the
association's secretary, David
Hodgson, at Grandnet Informa-
tion Processing Ltd, Wyvern
Way, Rockingham Road,
Uxbridge, Middlesex. Tel:
Uxbridge (0895) 58111.

Franchises offered

COMPUTERLAND, which
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Big rejig of CMG's management announced

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Downtime
by Chai

With our resident German experts abroad (probably in Germany), I was flustered to receive the accompanying photograph and its caption — all six pages of it in that language. Clearly someone is taking the bull by the horns, and using an MDS Model 40 to do something or other. The text yields one or two phrases at which I can guess the meaning — "permaproduktion" and "dehler das Prüfbullen", suggesting something to do with artificial insemination. I think I'll skip more searching semantic probing: beware of the Proofbull...

Thanks a million (give or take a zero)

ELECTION night quote from David Dimbleby, after the BBC had lost the Tories a safe seat by omitting a digit from their vote: "You can thank the computer for that."

Of course, it's possible that he meant, "You can thank the computer for pointing out the mistake," but somehow I doubt it.

Incidentally, Logica staff at Television Centre on the night were bemused that everyone had started calling the PDP-11/35 "Rover". Rover was only one of a series of animals they produced to show off their clever

graphics, but somehow the name stuck. Cardboard replicas were stuck up all over the place. (Replicas of the animal, that is.)

The programmers were awfully proud of their little trick which made the hands of Big Ben in one of the displays always point to the right time. Sadly, though, their cleverness was lost on the public: a lady reporter from the Mirror said, "Oh, I just assumed there was a TV camera pointing at a model clock." It's terrible the way nobody appreciates programmers, isn't it?

Uplifting quotes

HERE'S a new twist to all the "silicone chip" stories we keep seeing. Mr P. J. Morley sent me this cutting from the Sheffield Morning Telegraph:

Silicon, once associated in the public mind solely with the artificial endowments of actresses, is beginning to impinge on everyday life: a slice of the stuff has a way with electrons that has allowed small scale computerisation on the cheap for an infinite number of tasks.

Note the gentility of assuming that only actresses would have artificial endowments. Mind you, this may be connected with a story that appeared in the Birmingham Post about a microprocessor-controlled bra. (Honest!) I quote:

Scientists at the Tenovus Research Institute, Cardiff, believe it could tell women the best time to make love and avoid pregnancy. If you are wondering what

the data input would be, the story says it would come not from strain gauges but "tiny thermometers". For explanation of that, I will have to hand you over to our resident gynaecologist.

Buzzword...

I AM reliably informed that the name of the man who handles complaints for the Post Office in Hatfield is Mr Busby. Apparently he gets very embarrassed when rate callers insist on being told his name; they assume he is taking the Mickey and get even more irate.

So, you see, there are worse things than being called Shufflebottom. I knew someone called John Smith, who hated the knowing winks he would get from desk clerks whenever he checked into hotels with his (perfectly legal) wife.

Wang on the way to joining the billion-dollar club

THE declared intention of Wang is to be a \$1,000 million concern by 1986, but the company now believes that it will reach that target a year or two early. In the year to last June, turnover rose 47.5% to \$196 million, and orders taken since then are up 80% over the previous year.

The company has two main strings to its bow: word processors and new 2200 VS small mainframe, conceived to compete with whatever IBM introduced as the E-series.

"We started installing the VS in March last year, and in the 15 months to June this year, installations will reach 800, representing \$80 million of business," says John Cunningham, executive vice-president at Wang.

"Almost all the US business with the VS has been with customers new to Wang; about 25% is coming from IBM System 3 and System 32 users, while 35 to 40% is coming from large IBM customers who want to decentralise. We are also winning business from first time users

such as law firms."

One of the key features of the VS is a facility which enables Cobol programs to be written at a terminal, and this is proving an attraction with larger customers. The machine also has a 370-compatible instruction set (CW, June 22, 1978).

"Some software vendors are buying the VS in order to take advantage of the improved productivity offered by the screen Cobol, using it to write programs to run on IBM machines," comments Cunningham.

Developments on the way for the VS include SNA capability and an X25 communications interface; 2780 and 3780 communications emulation is available now. Wang already rates the VS as faster and more powerful than the new IBM 4341, and plans to extend the performance to three times that of the IBM offering, giving a power range likely to cover that of the full IBM E-series.

While Wang is doing well with the VS, the 2200 MVP and T processors are still the mainstay

Wang, whose executive vice-president John Cunningham (right) talked to Tim Palmer about the company's strategy and achievements, has declared its intention of becoming a \$1,000 million company by 1986. It is already well on the way.



of its business, bringing in an estimated \$220 million in the financial year to June.

But coming up very fast is the word processing business, which should reach \$120 million this year and already accounts for 17,000 workstations installed.

The Datapro research organisation in 1978 identified Wang as the number one supplier of word-processing systems in the US, and the company's business has been doubling each year since it entered the market.

This year's Hannover Fair saw the European launch of the top-end shared logic word proces-

"Design of workstations for the word-processors and this is converging, which will make it easier to upgrade users to one to the other," says Cunningham. Word processing software is also being written for the VS.

Two important new announcements for the word processors were also launched at Hannover. The Intelligent Image Printer, a non-impact Xerograph printer which replaces a traditional laser with a high resolution (90,000 dots per square inch) CRT display. Fibre-optic cables attached to the front of this screen transfer the characters to a Xerograph printing system.

The printer is controlled by 280, and runs at the equivalent of about 1,000 lpm. It costs \$33,000, which is about half the price of the IBM off-line high-quality office printer.

The other new product is a photo-typesetter designed to use with the Wang word processors. Controlled by a micro with the Nova instruction set, the Typesetter 48 translates word processing commands from the terminals into typesetting commands, and comes from Graphic Systems, a company acquired by Wang.

It costs \$22,000 in the US, as well as running online to the word processors, is available as an offline version with page tape input. Up to 250 typeface are available, and hyphenation programs are available which enable concurrent production of several languages.

Wang has been manufacturing its own daisy-wheel printer since November, supplementing the ones it gets from Diablo, and is also developing a high density dot matrix printer which could eventually become an OEM product.

Since an OIS/100 system of up to 33 micros, main memory capacity can be enormous: up to 14 to 2 Megabytes distributed through the system. Some 60% of those installed in the US have 2780/3780 IBM communications facilities. Office Communications Systems, from the company's large computer DP division holds no fears for Wang.

"In the US, IBM DP salesmen do not seem to understand the product — except in Cleveland," says John Cunningham.

"There's a guy who really understands what shared logic word processing is about, and that is the only place where we meet competition from the 3730."

Perhaps that stands as a warning to ICL, which used the Hannover Fair as the launchpad for its new dual-station 7700 information processing system. Controlled by the same 16-bit processor used in the 7500 terminal systems, and backed with 40K-bytes of store, the 7700 is designed for use with a package called Wordskil Manager which runs on ICL mainframes.

Olivetti introduces rivals for Qyx electronic typewriter

OLIVETTI'S answer to Exxon's Qyx electronic typewriter, the ET201 and 221, have now been launched in Europe, ahead of the American machine.

Unlike the Qyx however (CW, April 6, 1978) the Olivetti machines are not part of an upwards-compatible range leading to true word processors.

The 221 has a single-line gas plasma display, showing the last 15 characters typed. Both models have two lines of buffer memory, and 1K characters of storage for standard phrases and forms. This storage is refreshed from a recharging battery which, the company claims, will last with the power turned off for six months.

Many of the usual typing features

are available, such as proportional spacing, justification, and "lift-off" correcting ribbon; together with some unusual ones, for instance white-on-black printing. To do this, the machine prints a black rectangular blob with a special hammer and then makes the character in white on top of this with the correcting ribbon.

The printer is a daisy-wheel unit which Olivetti makes itself. The company is not, however, thinking of selling the printers OEM. Each daisy wheel has 100 petals, metalised, and various foreign-language characters are available.

The model 201 (no display) costs £1,075 and the 221 (with display) £1,275.



Keith Walkerdine, the new managing director of British Olivetti, puts the ET221 through its paces, watched by some of the top secretaries, who were given a preview of the machine's capabilities.

Perkin-Elmer launches family of 32-bit machines

FACED with serious competition from the Digital Equipment VAX-11/780 and the IBM System 38, the computer systems division of Perkin-Elmer Data Systems has launched a new family of 32-bit machines, the 3200 series. They offer a considerable price/performance improvement over the company's existing 32-bit minicomputers.

The PEDS computer division, formerly Interdata, already derives most of its business from sales of 32-bit machines, and introduced the world's first 32-bit minicomputer in 1973.

But the general feeling in the company is that its two existing 32-bit products, the 7/32 and the 8/32 Megamini, were not promoted strongly enough at the time by Interdata.

Now, with the backing of Perkin-Elmer, a \$600 million

corporation, the 3200 series second generation of 32-bit machines are seen by the company as the means of putting it in the same league as Data General and Hewlett-Packard in terms of revenues.

A PEDS spokesman said that the 3200 launch was the most important product announcement in the company's history.

He added that IBM's move into the 32-bit transaction processing systems business with the System 38 was seen as beneficial by PEDS, because IBM had the resources to educate the vast potential market for such systems.

He pointed out that PEDS had no intention of competing with IBM for existing System 3 users because of the software conversion problems, but PEDS envisaged taking a lot of new customer sales from IBM.

The first machine in the 3200 series to be introduced, the 3220, is intended for scientific applications, but the second member, to be announced next month, will be a commercial machine and, according to PEDS, will be the most powerful 32-bit mini announced anywhere yet.

PEDS says that 3220 rivals the VAX-11/780 in Fortran applications, mainly because of the PEDS globally optimising Fortran VII, while costing considerably less. A 3200 with 256K bytes of main memory costs £23,115 in single units, and a one Megabyte 3220 is priced at £40,710.

German giant takes over Tally printers

MANNESMANN, the German engineering giant, has acquired 96% of the US based printer manufacturer, Tally, following takeover talks which started late last year (CW, November 30, 1978), and is now bidding for the remainder of the Tally stock.

The German company's existing printer manufacturing subsidiary, Mannesmann-Praezisionstechnik, based at Ulm in West Germany, will continue even if there is a Tally subsidiary in the same country.

In the UK, for example, Westrex will continue to sell standard Mannesmann printers, although Tally will sell non-standard Mannesmann products like airline ticket, bank passbook and air traffic control printers.

The combined Tally-Mannesmann organisation employs nearly 1,500 people and its turnover is currently running at £37 million.

Hoskyns reunion

THOSE who used to work for the Hoskyns group are invited to a reunion at the Crown Tavern, Clerkenwell Green, London EC2, next Thursday, May 24. Organiser is John Sharp, and anyone interested can get details from him on 01-778 5302.

National and Zilog agree

PRE-EMPTING the negotiations between Intel and Mostek on standardisation of 64K RAM designs (Micro News, March 22), National Semiconductor and Zilog have announced an agreement in principle covering the same product and some others.

The agreement covers a range of quasi-static, eight-bit wide memory devices of 16K bits, 32K bits and 64K bits. National will receive tooling and technical data from Zilog on its recently introduced Z8132 32K bit device, and the 16K bit memory will be a derivative of this.

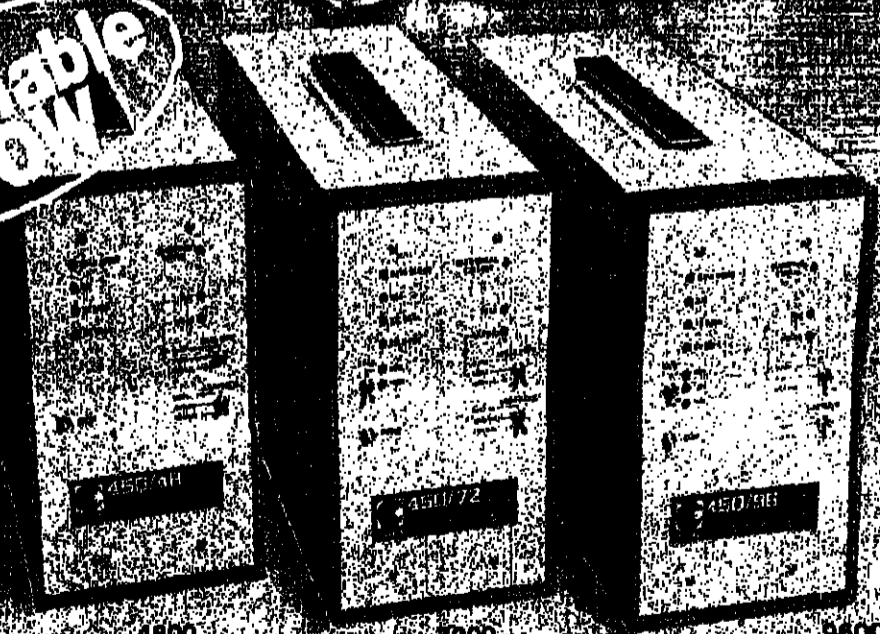
The 64K chips, respectively the National NMC4864 and Zilog 8164, will have common characteristics.

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Yours sincerely,

James Heading
JAMES HEADING

MICHIE'S PRIVATEVIEW

Communicating with alien mentalities

SYMBOLIC communication between human and alien mentalities has some odd twists, even when we are merely considering communication between people and computers.

Computer users normally imagine that anything and everything which a computing system knows can be made part of the user's mental property. But the theory of complexity tells us that this is not the case. The user's mental grasp, restricted by known limitations to the brain's information-handling powers, may be too small. When the user is a senior US naval officer and the computing system is the entire Arpa net, this problem has acute importance. Wanted, therefore, a computational go-between.

The Rand Corp's program RITA, developed by Don Waterman at Santa Monica, has brilliantly filled this role. Dr Waterman will be presenting RITA to the AISB Summer School on Expert Systems, to

be held at Edinburgh, July 11-13 (CW, May 3).

A further point concerns machine representations which are strictly incommunicable with humans. Unfortunately most people, including computer scientists, imagine that there is nothing here which cannot be cured with a pinch of user-friendly interface software. If the representation has been engineered, through the desire to optimise machine resources, to lie outside the "human window," one might as well be trying to cure a wrongly designed engineering part with sticky tape!

Turn now to communication with dolphins. Analysis of the high band-width chat-exchange among dolphins is being carried out with the aid

of computer signal-processing techniques. The sponsor is again the US Navy, which trains these intelligent sea mammals for salvage and retrieval work on the ocean bed.

Visiting San Diego's Sea World recently, where dolphins and their killer-whale relatives outperform the tricks of all the trained seals, apes, dogs and horses that you ever saw, I spent an hour with the chief trainer.

The dolphin's brain is anatomically more impressive even than man's both in size and in surface convolution. So I was interested that he placed the dolphins as not substantially smarter than chimpanzees, with which he had had extensive previous experience.

I sat in on a training session with a new killer whale. Rewards for successful tricks included food, pats on the head, and sometimes just permission to show off. "Showing off" took the form of prancing round the pool in an unbroken sequence of spectacular high leaps from the water.

What, then, is the huge brain mainly for? Partly, thought the trainer, to process the continuous stream of high channel-capacity sonar so that information about other dolphins and the surrounding world can be cross-correlated with the simultaneous flow of visual information. The Navy research workers in general agree with this.

Part, however, of the high-speed traffic of weird noises

seems interpretable as expression of mood and general sociability. A dolphin can teach a complicated new trick to another dolphin. But what part is played by linguistic instruction, as opposed to demonstration and imitation, is not yet clear.

The acuity of dolphin sonar allows the animal to discriminate at a distance between metal spheres identical in all respects except that one is hollow at the centre. Time-resolution of the acoustic wave-form is of the order of micro-seconds.

I also observed that two dolphins can, as it were, mutually "lock on" their autopilots. Swimming at high speed in formation they transported to safety the relatively fragile form of a girl who had fallen into the pool. Carrying her between their flanks they were able to maintain a pressure which neither crushed her nor let her slip.

The main obstacle to man-dolphin communication surely lies in the disparity between the cognitive worlds of the two life forms. The fact that dolphins live in a marine world, remarks Professor Michael Arbib of the University of Massachusetts, "must greatly condition what intelligence they have. If indeed they do have language, the words they use will be different from ours. What may seem an obvious concept to them may be a very complicated concept to us."

Arbib's paper centres mainly on problems of communications with inhabitants of other planetary systems.

What sorts of messages should we send? Will the intelligences, which we talk to be natural or artificial? Should we send pictures, and if so how will the recipients know which way up the pictures should be viewed? What are the linguistic and cognitive constants which might be expected to characterise all sufficiently intelligent beings, regardless of their perceptual and cultural milieus?

Arbib's cultivated romp through these topics is exciting reading. In a totally different way so is his recent text, written with Suad Alagile, on how to write structured and correct programs. A complaint is sometimes voiced that computer people have highly trained brains but illiterate minds.

It needs no more than a glance through the two works cited to show that, as with much else that is said about out profession, this too ain't necessarily so!

Donald Michie

REFERENCES

- Export Systems. AISB Summer School. Closing date June 30, 1979. Registration details from: Penni Montgomery, MIRU, Edinburgh University, 1 Hope Park Square, Edinburgh EH14 9NW. Tel: 031-967 1011 Ext 0843 (09.30-14.30).
- M. A. Arbib (in press) Minds and machines: the psychology of interstellar communication. Cosmic Search.
- S. Alagile and M. A. Arbib (1978) The Design of Well Structured and Correct Programs. Springer Verlag.

PROGRAMMER NOTES

How much optimisation can we afford, given falling hardware costs?

CODE optimisation — saving a few hundred words here and a few milliseconds there — has been a high priority since the earliest days of programming. It has also given programmers much satisfaction, demanding ingenuity and a thorough understanding of the language being used.

There are, though, several good reasons why optimisation is likely to play a much less important role in the future. One of these — to use the ubiquitous current cliché — is the falling cost of hardware as opposed to the rising cost of developing and maintaining software.

This trend, it is argued, is replacing the question, "How much can we save by optimisation?" with the question "How much optimisation can we afford?" The answer increasingly coming back is, "not much."

Take, for example, the job of squeezing a program into memory. To save a few K, for example, with more complex table formats could well take several hours, as well as increasing the difficulty of subsequent program maintenance.

The cost of such work is beginning to compare very unfavourably with the cost of buying additional memory. The most

commonly cited price here is IBM's US price of \$15,000 per Megabyte on the new 4300 machines — equivalent to \$15 per K.

To save 1K at this price, it is not economic to incur development and maintenance costs in excess of £7.50.

Further, the comparison assumes that only one program is involved. If others might in future require similar optimisation, the fact that the hardware purchase is a one-off expense makes the comparison even more dramatic.

The changing relationship between hardware and software costs thus has the potential to transform completely traditional attitudes to optimisation.

The fact that its frequent correlate — excessively clever and intricate coding — is also under attack from various directions, including the structured programming lobby, may lead it into a decline from which it will never recover.

Puzzler

DETERMINE the next number in the following series: 1, 11, 111, 100, 101, 11010, 11011. See page 63 for solution.

SOFTWARE FILE

Pentagon opts for CII-HB Ada design

A FLURRY of UK activity focussed on Ada is getting under way now that the Pentagon has chosen the CII-Honeywell Bull design as the foundation for its future standard real time language (CW, May 10).

Over the next few weeks, there will be a host of opportunities for the public to learn about the language and explore its implications. The UK has also been invited to participate in the next stage of official work on the language, seen by some as the most important development project since Cobol.

Among presentations already announced are a seminar at the Institution of Electrical Engineers, a seminar arranged by the National Computing Centre, and a tutorial course at the National Physical Laboratory. Ada will also be discussed at the Royal Signals and Radar Establishment industry open day on June 14.

First of the events is the IEE's afternoon seminar on May 21, starting at 2.30. Intended as a review of real time languages for industrial applications, it will include an appreciation of RTL/2 by SPL's John Barnes, who designed the language while at ICI.

Also speaking are RSRE's Philip Wetherall who will discuss Coral 66 and Mascot, and Gill Ringland of Immos, who will talk on languages for micro-processors. All will specifically consider the likely impact of Ada.

Two days later, on May 23, Barnes and Wetherall will again be speaking, this time at a one-day NCC seminar to be held at the Institute of Marine Engineers. They will be joined by David Shorter, of the British Steel Corp, and others from the

Post Office and the Royal Military College of Science, Shrivenham.

Covering the selection of real time languages for control applications, the seminar will address questions including the suitability of Ada for industrial use, its size, and its availability on microprocessors.

The fee for the day is £92.34 for NCC members and £102.60 for others.

The NPL tutorial is designed for software specialists, and aims to give them a detailed knowledge of the new language. Starting on June 4 and lasting one week, it will be restricted to 20 participants, who must have working experience of Pascal and at least one other high level language.

The course has been arranged by Dr Brian Wichman of the NPL, who, with Barnes, was one of two UK language experts in the CII-Honeywell Bull team that designed the green language.

The UK is also taking part in the Pentagon's design test and evaluation exercise, aimed at validating and refining the language design. The Pentagon is holding five workshops, four of which will be in the US. The other is scheduled for July, at the RMCS, Shrivenham.

CII-Honeywell Bull has been asked to supervise the workshop and systems and software houses specialising in military work will be invited to attend.

Although some changes can still be expected in the language, an opportunity to study the current design will be provided by the June issue of the ACM's Sigplan Notices. This will contain the current language manual and reprints of this sec-

tion will be available for sale to non-Sigplan subscribers. Three thousand copies of the manual are also to be published by the Pentagon.

Computer Weekly last year published an assessment of the project and its likely impact, written by Dr Wichman (CW, June 29, 1978).

Stock Exchange is first UK user of Tone-3

A PRESTIGIOUS first UK customer in the form of the Stock Exchange has been found by the European Software Co for Tone-3, its implementation of TSO for VSI users.

The Stock Exchange runs VSI on both a 370/158 and a 3031. So programmers can use CMS for development work, it runs VSI under VM during the day on the 158.

Breasting the summit

ECHOING the success of Telecomputing with TPS for the ICL 2903/4, a UK software house has won over 100 customers worldwide with a transaction processing system for the Honeywell Level 82.

Brought to light by the 100th sale, the software is called Equal and was developed by Mountain Software Growers, of Maidenhead. It gives Level 82 users an equivalent to Honeywell's TDS, which is only available on the Level 84 and above.

The software also runs on Level 64 and is being used on this hardware by three customers who have migrated from Level 82.

Equal is described by the firm as a dialogue management system and provides such things as an online screen format catalogue, automatic enquiry and update facilities, and sub-systems for data collection and program development.

Originally developed by Mountain Software Growers for a customer in Brussels, it has been

marketed by the company for nearly two years; there are now users in eight European countries. In addition to the UK and Eire, and there are already 30 users in the US, where MSG set up a subsidiary last July.

Interestingly, the 100th customer was the East Lindsey District Council, which ordered a Level 82/40 to replace an existing 2903. Its system supports one local and four remote offices, and includes applications developed for the Council by MSG.

The development and support of Equal, however, is rapidly becoming the largest part of the firm's business, even to the extent of holding back the development of other products.

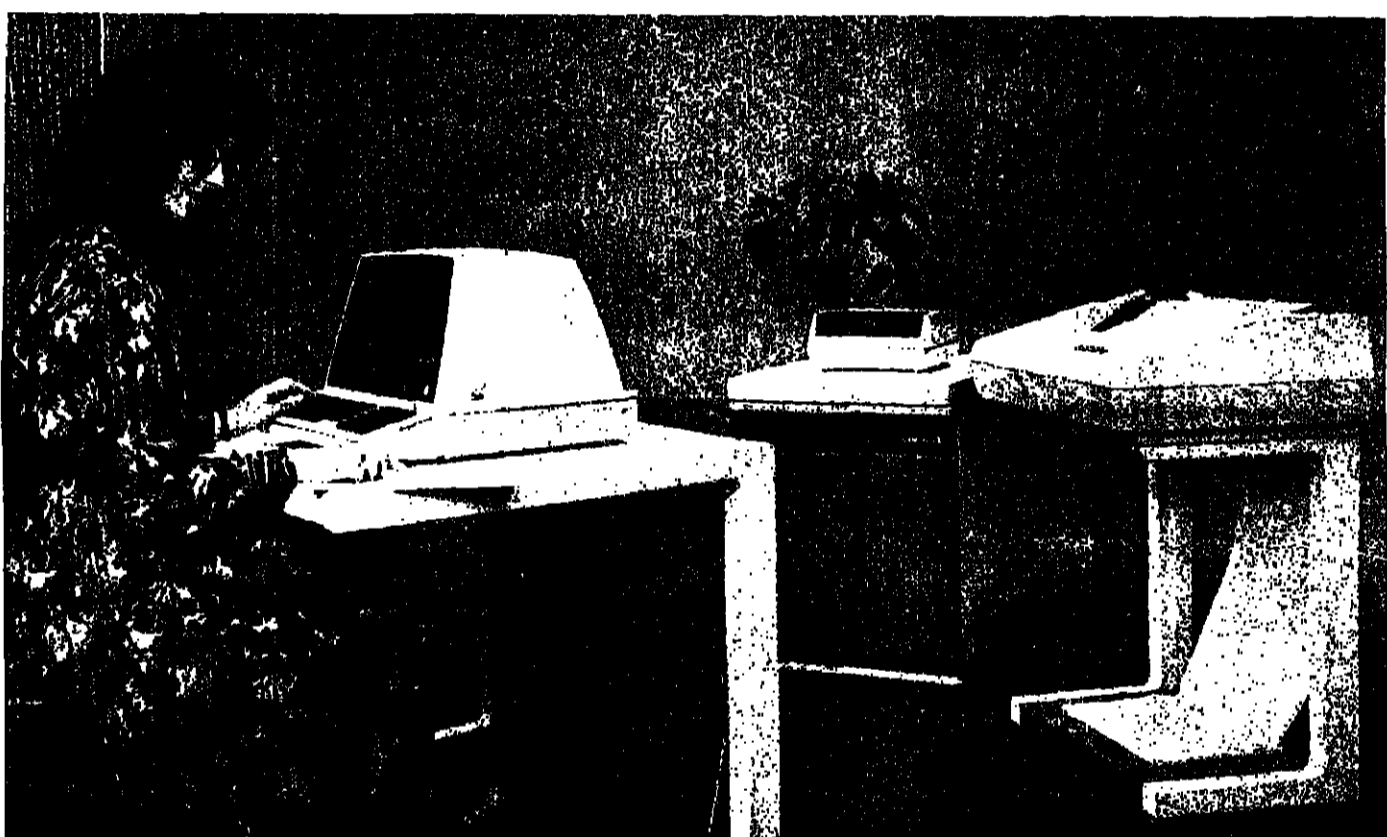
One of the most interesting of these is PDOL (Program Development Online), a terminal-oriented Cobol program generator. Originally developed for the Honeywell 2000 series, its implementation on current Honeywell systems has had to be deferred.

However with Tallisman having gone live last month (CW, April 13), the processing workload is now at its peak and, to eliminate the VM overhead, both machines run VSI in native mode during the night.

The Stock Exchange therefore needed a tool which could take the place of CMS outside the prime shift, primarily for handling occasional jobs such as editing and job submission. After a short evaluation which also included Tone-3, the choice was the installation's long-term plan of converting to MVS and TSO. The command compatibility of Tone-3 with TSO meant that it could begin to accustomise its programmers to TSO immediately.

The Stock Exchange is currently renting Tone-3 and reports itself well pleased with the system, which took only one day to install.

When it eventually migrates to MVS, it may well consider the MVS version of Tone-3, Tone-4, which is claim - 1 to offer significant performance over TSO while preserving full compatibility.



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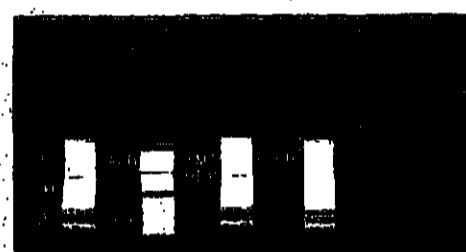
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RACAL



PEOPLE AND EVENTS

By Judith Morris



Director of OPM UK

Moty Arieli has joined OPM Leasing Services as vice-president and senior operating officer for Europe. He has also been named as managing director of OPM Leasing Services UK, the company's British affiliate. Prior to this appointment, Arieli was director of finance for Europe of Ite International.

Nigel Doe, formerly a project manager for ICL, has joined CTL as commercial applications software services manager. He will have responsibility for providing a commercial applications software development service.

Trevor Constable, a former sales engineer at the Reading Office of Perlec International, has been promoted to sales manager for the peripherals division of Perlec Computer Corporation, in California. Before joining Perlec, Constable was with RCA and IBM.

Richard Slorove has joined Data Logic as sales executive in its word processing division. He was previously a director of the International Office Planning Centre, and is a member of the Institute of Purchasing and Supply.

Richard Emery has been appointed sales and customer support engineer with Data Logic's terminal systems division. He joins the company from the John Lewis partnership where he was a senior systems analyst.

Expansion of new CAP company

CAP SCIENTIFIC, the company formed this year by the CAP-PPP group, has appointed three new members to its management team. The new staff will head groups which are involved in the company's activities in the scientific and defence fields.

The operational analysis group applies mathematical, statistical and operational research skills to improve decision making in investment, and to improve efficiency of systems operated by government and industry. Geoffrey Thomas has been chosen as manager of this group. Like the other two new



CASE appoints sales director

CASE has announced four new appointments, including that of Michael Hafferty to the post of sales director for the firm, and before joining CASE was product manager for the Post Office's Data Services. Marketing manager is Grant Martin, a former product manager for the telecommunications sector. Until recently personnel and administration manager for Aquascutum, Eileen Murphy becomes personnel manager for CASE, and Arthur Cunningham development manager. He formerly worked for Computer Technology as manager of its complete design operation.

recruits he is a former employee of Scicon, where he held the position of divisional manager for the company's management science division.

John Chisholm has joined CAP Scientific as project controller, where he will have responsibility for project management. He was formerly a project manager with Scicon and supervised most of the defence work. He has also worked on a number of assessment studies for the Ministry of Defence.

Appointed to set up a Systems Engineering group for CAP Scientific, Graeme Ferrero came to computing from the engineering industry. At Scicon, he was a management consultant with the management science division, and supervised a team of mathematicians, engineers and scientists specialising in naval systems analysis. The Systems Engineering group which he is to manage is itself partially oriented towards naval technology but with a hardware bias.

Neil Shalloo and Lyn Cox have both transferred from the client support division of Package Programs, to the company's sales department. They will be responsible for selling the MMS range of financial systems. Their previous jobs have been taken by two new systems consultants, Tony Stabblings and Kate O'Sullivan. Stabblings was previously an accountant with the London American International Corporation, and O'Sullivan was a computer audit and package implementation specialist with Deloitte Haskins and Sells. She originally trained as a teacher.

Roger Cooper has become manager of Hewlett-Packard's UK computer systems group. He was previously sales manager of the company's Western commercial district. He will take over from Derek Smorith who has become Hewlett-Packard's first Scottish region sales manager.



The appearance of Hewlett-Packard's marketing and sales headquarters, at Winnersh, has won the company one of this year's Racial awards for the environment. The awards are presented by Racial in conjunction with Berkshire County Council, and the judges remarked that obvious care had been taken to

ensure that Hewlett-Packard's site blended well with the surrounding area. In our picture (left to right) Douglas Morrell, deputy managing director of Racial, David Baldwin, HP's managing director, David Reed, market development manager of Hewlett-Packard, and Alan Wilson, business manager of HP.

BCS seminar

SOUTH YORKSHIRE branch of the BCS and the Sheffield Chamber of Commerce are organising a one-day seminar for small business computer users. The seminar, "How do I decide which small business computer is right for my company?" will take place on June 13 at the Grosvenor House Hotel, Sheffield. Speakers will include Dennis Jarrett, editor of Which Computer, and Brian Richards, manager of advisory services at the NCC. Further details from J. Humbridge, Sheffield Chamber of Commerce, Earl Street, Sheffield.

Dave Ahmed and Mike Sanders, both previously with Data Recording, have joined X-Data. Formerly manager of customer repairs, Ahmed has become a product manager for disc systems, and Mike Sanders has been appointed deputy manager. He was previously an engineer in test equipment services at Data Recording Heads.

Nick Gibson has become a junior systems analyst for the South-West branch of Redifon Computers. He was previously an actuarial student with Sun Life Assurance. Ian Edwards has been appointed branch manager for the Southern branch. He used to work for Burroughs as Leicester branch manager.

Chris Smith and Harry Micklethwaite have been elected respectively chairman and vice-chairman of the continuous stationery and form feed equipment division of the Business Equipment Trade Association. Smith is from Smith and Ozman, and Micklethwaite from Roneo-Vickers Business Forms.

John McGregor-Temple has been promoted to national support manager for UK field marketing operations with Redifon Computers. He was formerly British Rail systems support manager for the company. Financial manager for UK field marketing operations is Andrew Kolmar, formerly branch manager for freight forwarding.

Robert Ondrick has been appointed by Advanced Computer Techniques as vice-president of the company. He joined ACT as a senior consultant, and among his achievements is the design and development of INKODE, a compact storage system with applications for the blind.

Philip Appleby has become sales manager with Time Utilising Business Systems. He joined TUBS last year as a systems analyst.

Frits Janssen has become managing director of Mann Judd Management Consultants, the consultancy branch of Mann Judd the chartered accountants. He was previously group finance director of a Swiss based subsidiary of the Bowater Corp.

Richard Morry-West has joined Compend as senior technical author. He was previously with GEC-Micon Electronics as a technical author with the Publicity Department.

William Byrne has joined Dataeast as associate director of the electronic printer industry service. He formerly held the position of general manager with Metra Instruments.

Barry Marshall has become systems development manager with Coloroll. He was formerly a computer manager with Langham Life Assurance.

MSTC 21st anniversary

THE Management Systems Training Council celebrated its 21st anniversary recently in London. Present were over 100 management systems experts from the country's leading industrial and commercial organisations, who have been involved in developing or conducting training courses for the MSTC. Originally established in 1958 as the Organisation and Methods Training Council, it was set up to provide training in the new management techniques which emerged after the war, and now trains management personnel from inside and outside its membership.

Colin Colmer, a former organisation and administration manager in the Customer Services division of CTL, has been appointed by Quest Automation as customer services manager. He will be responsible for the company's post sales service to the UK, and Western and Eastern Europe.

Brian Howlett has been appointed systems manager of Honeywell Information Systems in Ireland. In the past three years he has been the country's leading division manager for Ireland. He is based in Dublin.

DIARY

MAY 18 Microprocessors — the implications for general management. Southern operational research group, Henley, Administrative Staff College, Henley. Details from Maureen George, on 049 166 484.

ACM followed by guest speaker and buffet. BCS Hampshire branch, The Porters Heron Motel, Andover, 18.00.

GPL — a graphics programming language. P.O. Dale, UK APL user group, Imperial College, Exhibition Road, London SW7, 14.00.

MAY 21 Standardisation of high level languages in the industrial real time field. IEE control and automation division. Savoy Place, London WC2, 14.30.

Micro and your business. British Institute of Management. London Penton Hotel, Cromwell Road, London SW7, 8.00.

MAY 21-22 Microelectronics and data processing — the next five years. Infotech. The Cavendish Centre, London.

MAY 22 Formation of Midland regional committee and local branch structure. IDPM Chamber of Commerce, Harborne Road, Birmingham, 19.00.

Microprocessor fair/AGM. BCS, Reading branch, Park House, Whiteknights Park, Reading, 20.00.

AGM/Presidential visit. Prof Frank Sumner. BCS S Wales branch, Cardiff, 18.30.

MAY 23 Impact of micros on DP management, conference and exhibition. Henao, J. Rogers. IDPM, Bloomsbury Centre Hotel, London, 11.15.

Real time programming language NCC. The Institute of Marine Engineers Conference Centre, Mark Lane, London EC3, 18.15.

MAY 24-25 Polymodel 2, a conference on modelling and simulation in practice. Teesside Polytechnic. Dept of Mathematics and Statistics, Teesside Polytechnic, Middlesbrough, 10.00.

MAY 24 Arithmetic processors. R. Doolan. BCS, BCS HQ, 13 Mansfield Street, London W1, 14.00.

Applications of image analysis to remote sensing. W. Gardner. Nuffield Physics lecture theatre, Keble Road, Oxford, 18.30.

AGM/talk by Prof F. Sumner. BCS Preston branch, BCS Leeds branch, Parkway Hotel, Leeds, 6.30.

MAY 24-25 IBM CUA programming group. Centre Hotel, Portsmouth, 14.00.

MAY 24-25 Computers in critical care and pulmonary medicine. IEEE Computer Society, Norwalk, Connecticut. Contact: Stephen Nair, Norwalk Hospital, Yale University, Norwalk, CT 06856.

MAY 30 Computer acquisition, avoiding pitfalls. European Study Conference and the Institute of Internal Auditors, Conlino's Hotel, London. Tel: 01-262 5011. Data manager, MSP, 71 Gloucester Place, London W1, 10.30.

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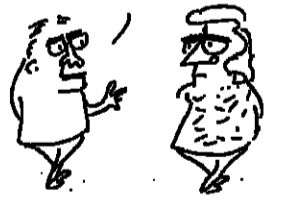
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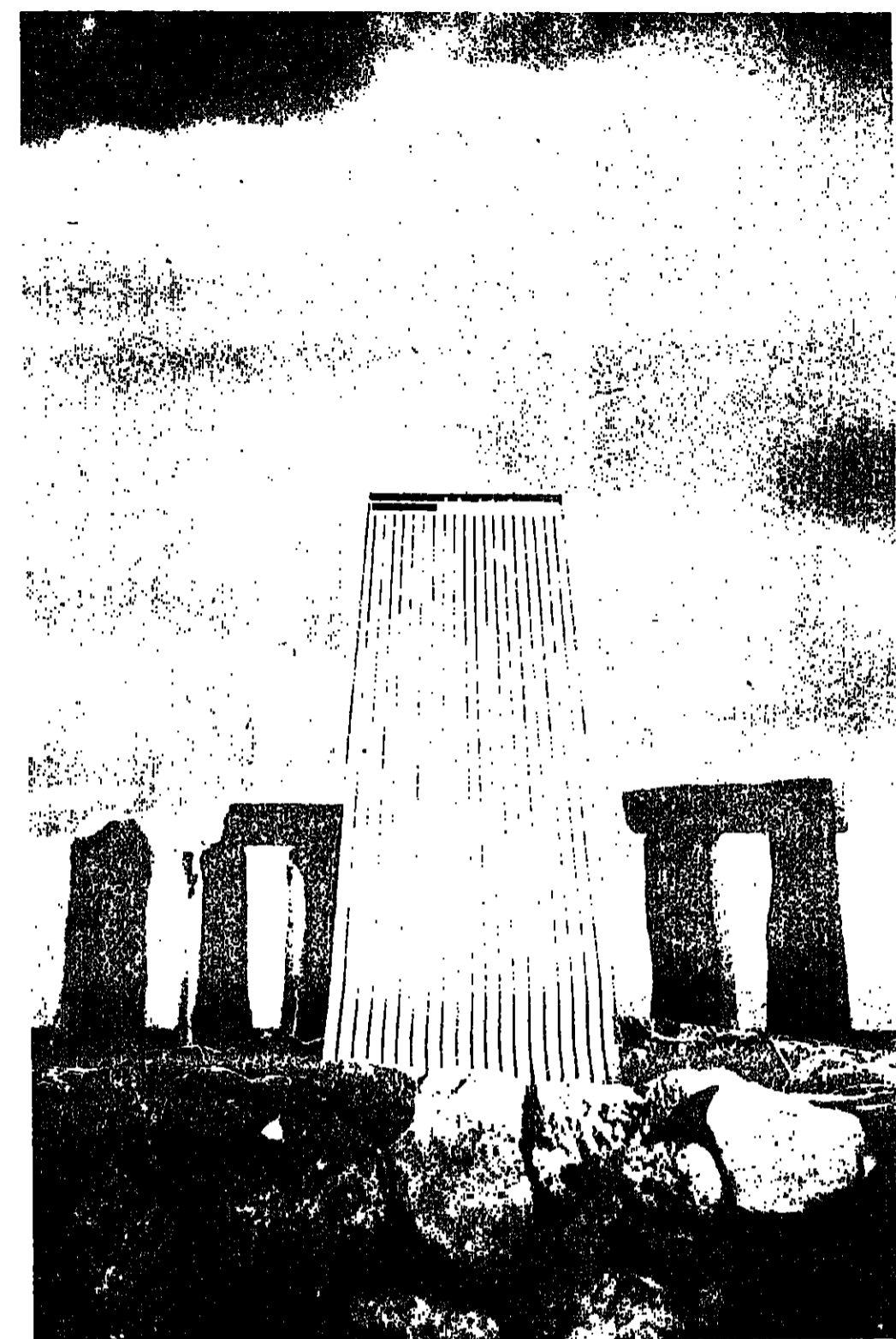
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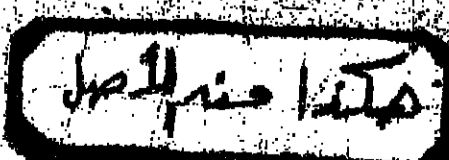
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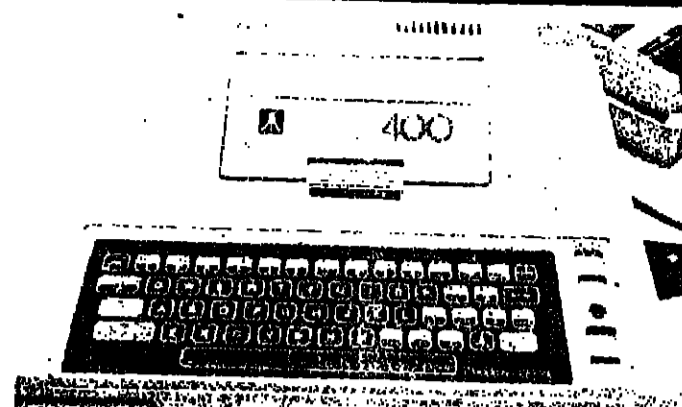
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MICRO NEWS IN NEW ORLEANS

By Martin Banks



THIS is the Atari 400, the \$499 personal computer due to be launched in August by the Atari division of Warner Communications. Based on the MOS Technology 6802 micro, it comes with 8K bytes of RAM and up to 16K bytes of ROM.

With its bigger brother, the Atari 800 system, which can be equipped with up to 48K bytes of RAM, and for which floppy disc systems will be available, it constitutes the company's attack on what could be a multi-billion dollar market by 1985. ROM-based software packages will include such consumer-oriented items as "teach-yourself" disc dancing.

Manufacturers roasted by dealers

THE manufacturers came in for some criticism from the dealers at the Forum, when representatives of both large and small outlets had some strong things to say about how the industry does business.

Dan Ellis, vice-president of the New Orleans-based Computer Shoppe, said that manufacturers don't back dealers with the right documentation, or with reliable products. "A good percentage are dead on arrival," he said.

He also claimed that it was impossible to sell systems at the manufacturer's advertised list price, especially as the dealer has to carry the subsidiary costs of repair and customer training. "Most of the manufacturers want money in front; they don't give credit," he said.

Selling to small businessmen was another major problem. "They want a full, turnkey operation for nothing, so we have to try and sell like IBM

WHEN a conference oriented more than a little towards the information needs of the American stock analyst fraternity spends time considering the long-term significance of the personal computer industry and marketplace, then that market can fairly be said to have "arrived".

Such a conference was held two weeks ago in New Orleans, US, under the auspices of leading New York stock analysts Morgan Stanley.

Personal computers formed a conference within a conference, the main subject of the event being a long look at the semiconductor business and its future.

Micro News Editor MARTIN BANKS went to New Orleans to hear what the future may hold. This week he looks at personal computers. Next week it will be the turn of the semiconductor business.

Lack of software will limit market growth

THE fact that the software business for personal computers had a total sales volume of \$25-30 million, compared to an estimated \$350 million worth of hardware sales, is indicative of the major problem the market for such equipment will face in the future.

So said Dan Fylstra, president of Personal Software, at the Morgan Stanley Personal Computer Forum.

The market potential was there, he said, pointing to the fact that general software suppliers are expected to sell over \$1 billion worth of product next year — a 40% compound growth rate over 10 years. This, he said, was indicative of the scope for micro-based software products.

The main limitation, however, was going to be the shortage of good programmers capable of fulfilling the market need.

In 1978, for example, there was a requirement for around half a million programmers in the computer industry. By 1985, however, the demand is expected to rise to over 1.8 million, a figure not likely to be met by supplies.

Therefore, Fylstra feels, software will be the most important limiting factor in the development of the personal computer marketplace.

To some extent, there is something of the chicken and egg situation about the software industry for personal computers, for although the potential is large, it is not yet large enough for the bigger software producers to consider entering.

Most of the companies specialising in personal computer software are, he said, one

or two-man shops, with only a few "big" ones grossing \$500,000 a year.

And even though a large number of hardware systems are currently sold, he suggested it is difficult to point to a particularly large volume of good software packages sold to users.

The long-term potential, however, is enormous. Some industry estimates suggest that the future software package will be selling, in unit volume, around four times the volume of computer systems.

Many of these packages are to be in the leisure markets, though currently this only represents some 20% of the total market. The rest is made up of system software, 38%, and "labor saving" business packages, 42% of the total software product marketplace.

The leisure market, however, is expected to have considerable potential, even though it is likely to require some different, novel, marketing techniques to exploit it. This point was made by Peter Rosenthal, software products manager for Atari.

Having been in the video games, and subsequently in programmable games business for some time, he said that the company had considerable experience of the market. It had sold over 4 million packages to date.

His approach, he said, would be the licensing of major "names" in specific consumer-oriented market sectors, as a promotional ploy. Such names would, for example, be used to promote packages like a disco dancing instruction package.

TI and Atari will test mass market potential

THIS year will be the acid test of the market for sub-\$500 personal computer systems. The entries of Texas Instruments, probably in June, and Atari in August, will show whether the consumer is ready to invest in such systems in the same way as television and Hi-Fi.

This was the view of Ben Rosen, vice-president of Morgan Stanley, in his chairman's address to the Personal Computer Forum.

These two market entries will be important, he said, because they are aimed at the consumer directly, and that market means high-volume sales. This in turn will mean that unit prices for personal computer systems may track the learning curve of the semiconductor industry and come down.

Even though there are some 50 manufacturers of personal computers in the States now, he

felt that the future market leaders could come from one of these two new entrants.

And though cynics, he said, might say that being lead company in the personal computer business was like "having the best deck-chair on the Titanic", Rosen indicated that the market potential is liable to be very great.

Some 250,000 units are estimated to have been sold worldwide in 1978, with a total of \$350 million. This year, the volume is expected to be \$500 million, at a value approaching \$600 million. Current growth rates, he said, indicate a \$1 billion market in nine years' time, though there is speculation that this may be reached by 1982.

Applying only conservative growth estimates — 12% per annum — personal computer sales could be a \$24 billion business by the year 2000.

Entry of giants 'a good thing'

ALTHOUGH the entry of Texas Instruments into the personal computer market is in no way yet "official", considerable interest was expressed by the audience at the Forum in how the industry saw the "probable" entry of the company next month.

Mike Markkula, chairman of Apple Computers, summed up the situation by saying that he saw no threat from TI's entry. "The market is a long way from being saturated," he said, "and

as long as the products themselves are good, it can only be seen as a good thing for the industry and market."

There was a strong consensus between the manufacturers that TI, and the more "long-term" possibilities of IBM and Hewlett-Packard entering the fray, would help expand the market and the awareness of consumers as to what is available.

DATA SYSTEMS NEWS

ISSUE NO 5

Second Generation Supermini Launched

A new chapter in computer history is opened with the announcement of the Perkin-Elmer Series 3200, the second generation of 32-bit Superminis. Perkin-Elmer introduced the world's first 32-bit Supermini back in 1973 and, since then, have sold over 2000 32-bit systems worldwide.

This background of over five years' practical experience represents a uniquely solid basis for the launch of the new generation. For example, it adds up to a staggering 500 man-years of 32-bit software development.

No other minicomputer manufacturer, it is believed, comes near to matching this capability.

FULL 32-BIT SYSTEM

First available processor in the Series 3200 is the Model 3220, which has full 32-bit architecture and MOS memory in 256Kb modules up to 1Mb, with ultimate expansion to 4Mb. Major features are detailed memory error logging and full

memory protection by battery back-up.

The Perkin-Elmer Model 3220 is ideally matched to large-scale commercial applications involving on-line, interactive transaction processing, to military and aerospace real-time simulation and, in conjunction with the globally optimising FORTRAN VII compiler, for scientific number crunching.

INDUSTRY FIRSTS

The Computer Systems Division of Perkin-Elmer has an impressive record of innovation. Achievements include the first micro-

programmed minicomputer, the first system with 1Mb of directly addressable memory, the first writable control store with true software support and the first multipoint memory for multiprocessor applications.

PRICED LIKE 16-BIT

According to Marketing Manager, Gordon Ambidge, "The new Perkin-Elmer Series 3200 encompasses everything we've learned during our five years of delivering 32-bit minicomputers and software. These second generation Superminis combine state-of-the-art technology with the customer-proven, 32-bit software originally conceived for our first generation Models 7/32 and 8/32."

The first processor in the series, the Model 3220, is priced like a 16-bit mini, but is clearly in the Supermini class.

MATURE SOFTWARE

The wide range of Perkin-Elmer field proven 32-bit software includes the OS/32 operating system with multiterminal capabilities, ITC, the Transaction Controller, COBOL, SORT/MERGE, BASIC, OS/MTM for multiterminal program development facilities, the industry-leading FORTRAN VII and a HASP emulator.

The Model 3220 is priced from £23,115, with 256Kb of memory, to £40,710 with 1Mb. Since the USA launch in February, early production is fully sold. UK deliveries will start in September 1979.



Woodall-Duckham Chairman, William J. Ryder and Perkin-Elmer Sales Manager, Rob Hollands sign the contract for the Perkin-Elmer 8/32 system.

Versatile System at Woodall-Duckham

Operating an on-line database system satisfactorily in parallel with technical computing in a large engineering organisation, including transmissions to and from offshore platforms, calls for a very special minicomputer — one capable of both very fast processing and very rapid data transfer to and from mass storage devices.

To meet such a requirement, Woodall-Duckham Limited, a member of the Babcock & Wilcox Ltd. group and a major process plant contracting organisation, selected a Perkin-Elmer 8/32 Supermini after an extensive evaluation of the offerings of some 12 manufacturers. Woodall-Duckham endorsed the grounds of performance, capability, facilities, technical support, price and delivery.

Cincom's TOTAL database software had been selected as being appropriate to Woodall-Duckham's needs. The ability to run TOTAL

concurrently with comprehensive technical computing services, including on-line communication with Babcock & Wilcox (Operations) Ltd. (BW) mainframes and other bureau facilities, was a major factor in the selection of the Perkin-Elmer 8/32.

Implementation will be phased over a two-year period. When complete, the system will combine on-line data capture with a full suite of commercial applications in COBOL. Including manpower allocation, materials controls, project accounting and other accounting services to give up-to-date management information on every aspect of the activity. Technical computing facilities with software in FORTRAN & BASIC will be provided for users in their own work areas.

The system includes the superfast Perkin-Elmer FORTRAN VII, the only globally optimising FORTRAN compiler available on a mini-computer.

New Text Facility

Just released by Perkin-Elmer, the new OS/32 Text Facility provides editing and formatting capabilities to enable documents of all types to be prepared on any Perkin-Elmer 32-bit processor.

The program runs interactively or in batch mode and text is provided in two forms:

Text I includes the full editing and formatting capabilities. Text II provides the formatting capability only to format files created under OS/32 Edit.



Model 3220 Beats Rivals

The newly announced Perkin-Elmer second generation Supermini, the Model 3220, significantly outperforms minicomputers in its price range. With a starting price of just over £23,000, it is far lower priced than any other comparable minicomputer.

The Model 3220 will directly address up to 4Mb of MOS memory in 256Kb modules. There are eight sets of 16 registers, for a total of 128, each 32 bits wide with four levels of external interrupts.

ACCURACY AND SPEED

Performed on a full 32-bit word, error correction is standard on the Model 3220. Using seven additional bits for each word in memory, all single bit errors are corrected and all double and most multiple bit errors are detected.

A Loader Storage Unit with watchdog timer is also standard. The LSU loads the automatic boot program in the memory, which then loads the operating system from magnetic tape or disc.

Implemented in 2Kb of PROM, the boot load program also contains the self test which checks out memory and certain processor functions before loading the operating system.

The Perkin-Elmer Model 3220 uses 1Kb of optional bipolar cache memory. With a hit ratio of 89%, a memory access time of 340ns is achieved. All high speed devices, such as mag tapes and discs are connected to an Extended Direct Memory Access (EDMA) bus, which gives a throughput of 8Mb per sec.

The Model 3220 supports up to 1023 devices with four user-selectable priority interrupt levels.

EXTRA PERFORMANCE

The optional Floating Point Processor has 46 floating point

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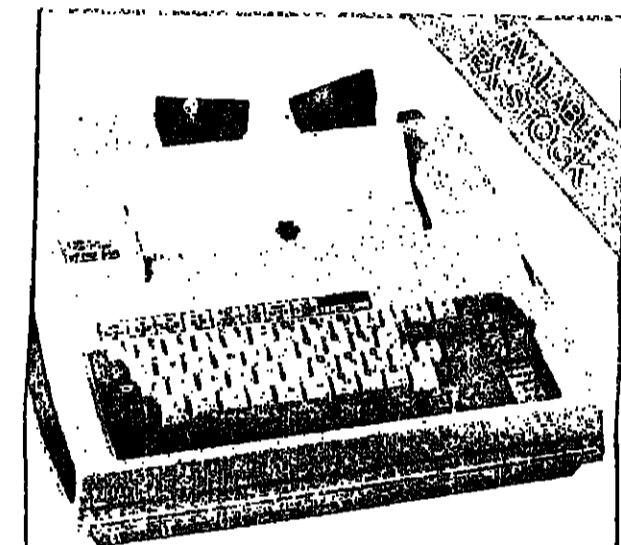
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COMPEC EUROPE



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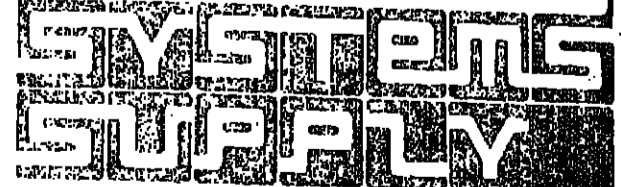
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Belgium catches up with the mini and the micro

COMPUTING in Belgium is changing. From being a mainframe-dominated market with a strong IBM orientation, Belgium is now beginning to catch up with the virtues of the mini and the micro and small dedicated systems.

This trend is still at a relatively early stage of development, but a visit to the Compec Europe exhibition, held in Brussels last week, confirmed that it is under way.

People with experience of both the Dutch and Belgian computer markets claim that Belgium is still at least a year behind Holland in its approach to small computers, but nevertheless an awareness that computers does not just mean mainframes, is now apparent.

As in other countries, one of the main agents of change is undoubtedly the microcomputer, and this in turn stimulates a general awareness of the enormous potential of alternative systems from a whole host of suppliers. At Compec Europe the stands which attracted the most visitors were those displaying "personal" computers.

A particularly interesting product was a "second generation microcomputer" manufactured by Data Applications International, a microcomputer engineering company established in Belgium in 1971 by Claude Simpson, an American expatriate. A DAI system can be supplied with from 8K to 48K of user memory, a resident high-speed Basic Interpreter and interfaces for domestic TV sets,

audio cassette units and hi-fi equipment.

Claude Simpson was extremely pleased with the reaction to his microcomputer at the show and said, "Compec is important for this kind of business. If we were prepared to accept orders from people off the street we could have sold over 100 systems. But we are just getting our sales network up and inquiries are being passed to our distributors."

Another exhibitor with a similar reaction was Claude Duchesne, of Tandy, whose stand was crowded with visitors for long periods throughout the show. He said that many of the visitors were interested in business applications of the TRS80 — primarily accounting and stock control.

Equally pleased was Mr de Cuyper, product manager with ITT, who said that interest in the ITT 2020 (the designation under which ITT markets the Apple microcomputer) had been enormous, with many people asking about business applications.

Interest was also consistently high on the American Data Scientific range of micro systems together with the CompuLink UK 101, a "superboard" in kit form incorporating a 6502

microprocessor, a 4K RAM, 8K Micro Basic in ROM and a keyboard — all for £219.

A microcomputer which was new to most visitors was the SHC 8000 personal computer, exhibited by LSI Small Business Systems. This Z-80 based system is manufactured by Sanei in Japan and marketed under the Teal label. A 16K system with an 84 lpm line printer, two dual density floppy disc drives and Super Basic, sells for around £2,000.

Another company which has extended its microprocessor expertise into the commercial field is INCAA of Apeldoorn, who exhibited a new small office system, the 2000, which can undertake accounting and word processing operations on the same configuration.

Texas Instruments exhibited its DS990 minicomputer-based business system and reported a good reaction from users of time sharing services who wanted their own machines but with communications facilities which would allow them to hook into larger machines, especially IBM mainframes, as required.

Moving up into full-blown minicomputer-based systems, SEMS, the French mini manufacturer, was exhibiting its new SEMS Interactive Systems.

According to SEMS spokesman Daniel Art, interest was shown by service bureaux and lot of end-user prospects in business was expected to come from these potential customers.

Another mini-manufacturer who reported receiving important leads was Crowther of Modcomp. It exhibited a range of products, including a means of getting across a company's name and professional image, as Modcomp has opened an office in Amsterdam.

The growing demand for immediately accessible computing power as opposed to delays inherent in many systems is apparent only in the appeal which a personal computer holds for businessmen and the engine but also in the development of systems which can be easily tailored to meet such a demand.

Two British companies Mideltron and Computer Marketing, were both showing "mid-way" building block based on the DEC LSI II which can be incorporated in suit systems. The MV3 from Mideltron comprises a processor, 20 words of Intel memory, a 11 Baydel dual floppy giving 26 bytes of storage per drive at two Quad slots for system expansion, all for a one-off end user price of £3,700.

A similar system is being marketed by Computer Marketing under the designation Comma VO3.

Commenting on the show, Mike Westbrook of Computer Marketing, said that he had received one inquiry in particular, for a large number of DEC printer terminals, which if included would pay for their participation in the exhibition.

Transdata, also in the British section of the show, reported good reaction to its CX48 micro-processor micro system and to its Model 318 paper tape converter, a micro-controlled

● Turn to page 17

LEFT: One of the most impressive stands was that of Fungus Computer Products who showed a comprehensive range of software equipment for DEC PDP 11 and other minicomputer systems.

BELOW LEFT: SEMS, the French mini manufacturer, exhibited a 512-L interactive system capable of handling a high speed paper, seen here in front of the processor, and up to four VDU's.

BELOW: The INCAA 2000 micro-based system which can undertake both accounting and word processing on the same configuration.



The 4027 colour graphics terminal provided an eye-catching display on the Tektronix stand.



How do you exhibit software? Micro Focus got round the problem by demonstrating their CIS Cobol on an Intel development system.



The new EMI 8800 intelligent tape transport, which is microprocessor controlled, was the highlight of the EMI Technology stand.

Belgium catches up

● From page 16

device, which enables Telex messages, for example, to be fed directly into a word-processing system.

Finally, to one of the star products to be exhibited at Compec Europe, the Tektronix 4054 graphic computing system. This unit, which was introduced at the Hannover Fair, is a desk-top computer with a large high-

definition screen, making it particularly suitable for use by engineers.

According to Jacques Manscourt, European marketing manager for Tektronix Computer Graphics, the 4054 which has communication facilities enabling it to be used either off line or online to a database on a larger machine, met with a particularly good reaction at Compec Europe.

Agency deal signed

AN agency agreement was signed at Compec Europe between Lion Systems Developments of Gerrards Cross and Eurotech Belgium SA and Eurotech Italia SPA.

The agreement, which covers the comprehensive range of network control and switching products manufactured by Lion Systems Developments, extends to Belgium, Holland and Italy. Commenting on the new link-up, Mr R. J. Bovington, sales director of Lion Systems Developments, told Computer

Weekly that he saw Eurotech, a subsidiary of Cable and Wireless, as an ideal company to handle their systems.

He said that he saw the main opportunities for his company in Belgium as lying in the field of network control systems for banks and insurance companies.

He added that it was the first time that Lion Systems Developments had exhibited at Compec Europe and he was pleased at the tremendous number of high-level inquiries they had received.

Graphics bureau in Holland

A GRAPHICS bureau has been established in The Hague by Applied Graphics Systems (Europe) BV and Repko BV, to enable companies to take advantage of computer graphics without having to invest heavily in specialised hardware and software.

The new bureau provides users with the facility to produce management graphs, bar and pie charts, perspective drawings from plan drawings, printed

circuit board layouts, and piping and instrumentation diagrams.

Full duplex dial-up lines operating at a transmission speed of 1200 bps are available so that clients can make use of the facilities of the bureau from their own offices. Alternatively their own staff can use the terminals at the bureau, or bureau staff will process a client's data, returning results to his office.

The bureau is equipped with a Prime 300 minicomputer,

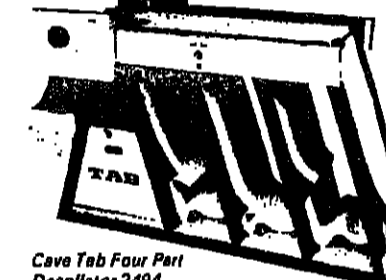
Chris Hipwell reports from Brussels



A TRS-80 personal computer, complete with voice synthesiser, attracted a great deal of attention on the Tandy Stand.

In ten minutes Cave Tab can show you how to get on top of your computer output.

Computers can be hard masters. Keeping on top of the paper they produce to get the forms out on time takes specialist know-how.



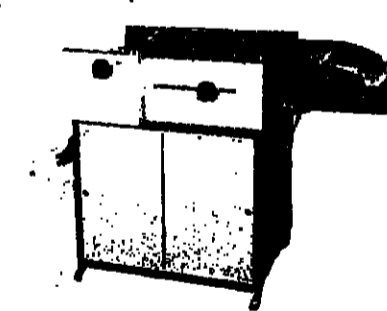
Cave Tab Four Part Decollator 2494

A Cave Tab four part decollator splits up four part print-outs, trimming and halving them, too at up to 475 feet per minute. Six and eight part option also available.

Whether you decollate or not, a Cave Tab high-speed multi-part burster will take the job from there. It trims, splits, bursts and stacks paper or card at up to 350 feet a minute. What's more, however fast the burster runs, it stops in one form's length.

You can line up the Cave Tab Imprinter/Merger with the burster to add signatures, centre slit and merge the two halves together. Alternatively the Imprinter/Merger can be used on a stand-alone basis.

And now there's a new, table-top miniburster too — the Cave Tab 2464. Designed for small to medium sized businesses and data centres, it offers all the easy-to-use convenience of the big Cave Tab machines plus the ability to tackle all forms, including cards, at speeds up to 200 feet per minute.

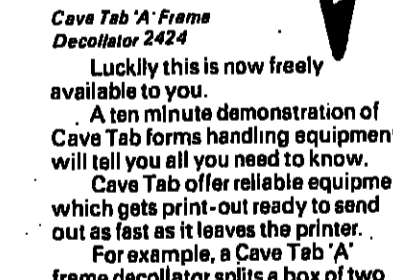


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So call us for a demonstration. It's quite free. It puts you under no obligation. We do it on your premises. And it need take up no more than ten minutes of your valuable time. We promise that no ten minutes could be better spent.

Ring Cave Tab on Northampton (0604) 48125 or fill in the coupon to catch up with your computer output.



Cave Tab 'A' Frame Decollator 2424

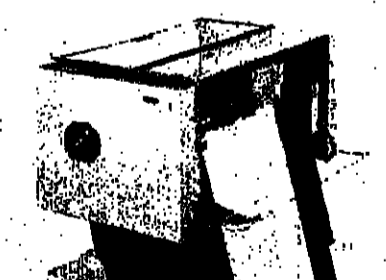
Luckily this is now freely available to you. A ten minute demonstration of Cave Tab forms handling equipment will tell you all you need to know.

Cave Tab offer reliable equipment which gets print-out ready to send out as fast as it leaves the printer. For example, a Cave Tab 'A' frame decollator splits a box of two



Cave Tab Table-top Miniburster 2464

part stationery and removes the carbon at up to 450 feet a minute. It will also deal rapidly with larger sets. Yet it's simple enough for anyone to set up in 45 seconds.



Cave Tab Imprinter/Merger 2450



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Please tell me more about Cave Tab forms handling equipment

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Investigation into word processing

REGARDING the current importance of word processing, I wish to comment on your recent report (CW, April 19) on the CCA investigation into word processing, carried out at the DES in Darlington. During the investigation, I was heavily involved as technical consultant to the Agency.

It is, of course, the case that the CCA results were gleaned from a live and carefully controlled experiment. The work generated by DES authors was shared deliberately as equally as possible between a control group comprising an automatic and electric typewriters and a shared logic word processing system, supplied by Wordplex.

However, this experiment, by its very nature, cannot be taken overall as a form of benchmark for general guidance. This is because those interested in using word processing systems, whether government departments or indeed commercial concerns, will obviously use

their systems as advantageously as possible, rather than confining themselves to a rigid and particular work mix. Hence comparison is difficult.

Incidentally, before I left the Agency I was aware of the desire shown by the DES to retain their word processing system to be run on their own lines once the CCA experiment was concluded; I believe that they are now successfully doing this.

Concerning the environmental problems mentioned in your report, I can confirm that a large proportion of these were due to an untypically electrically noisy mains supply and earth. Near

the end of the experiment, when the supply was made more normal, improved serviceability of the equipment reflected this. The equipment alone was not to blame, as was borne out by high serviceability figures made available by other users.

Finally, the need for elementary air conditioning arose, as it would for any other processor of a similar current consumption, from the choice of a small enclosed room for location of the processor and its accompanying disc units.

H-P. G. KELLY
Leigh-on-Sea,
Essex.

The Editor welcomes letters on subjects published in Computer Weekly, or on original topics. All letters must be accompanied by the writer's name and address, not necessarily for publication. All letters are liable to be cut at the discretion of the Editor, unless correspondents state that their letters may not be cut.

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CW/6

LETTERS

To: The Editor, Computer Weekly,
Dorset House, Stamford Street, London SE1 9LU

Training of programmers

THE article by Jonathan Hamilton on the training of programmers (CW, April 19) was an admirable summary of their craft and survey of the problems of DP training.

Unfortunately while arguing against the "leave it to others" attitude in the recruitment of trainees, he falls into this same trap himself. For in his last paragraph he is ready to leave it to someone else to start the ball rolling, i.e. "... government training schemes."

However, the answers to the

problems he outlines are relatively simple, and a few far-sighted organisations have already got to grips with them. Given the right planning, any user DP department or software house can provide effective training for programmers and make an immediate return on their investment.

Also, given the correct planning, the original investment of trainees can be made much lower. The ingredients of this plan are simple: 1 A proper programming aptitude test to help in selection; 2 Good, but not excessive, initial language training; 3 The correct use of structured disciplines in the installation; 4 Top-up training on advanced topics only when the individual is ready to progress.

In this way, the industry and individual companies can look after their own programmer requirements, and cut down on the loss of productivity and wasted training when staff leave early.

E. D. B. TEBBS
Managing director
HIS Applied Systems

Information wanted—

I AM endeavouring to identify those manufacturers who are offering APL on small microcomputer systems. For many purposes interactive APL would be much more useful than interactive Basic, which is the usual offering. I know some companies already have this facility but would like to hear of any others.

Department of Statistics
Newcastle University
Newcastle upon Tyne

Dr D. A. EVANS
Senior Lecturer in
Statistics

Sharing case studies for mutual benefit

AS members of a working party for the development of case study material to be used on data processing and systems analysis courses, we are engaged in a survey of the case studies now in use. We wish to collate these studies and make them available to interested users.

So far we have contacted educational institutions but we are aware that there are many organisations in both the private and public sectors engaged in training computer staff. If these organisations use case studies and are willing to co-operate

with us by sharing their studies in return for our own, we may be educational institutions we have missed.

Would any interested person please contact Anne Leaver, Department of Mathematics, Computer Studies, Sunderland Polytechnic, Sunderland, Tyne and Wear?

Principal lecturer, Mathematics
A. M. C. LEAVER
Senior lecturer, Statistics

Different solution

MY father showed me the puzzler of the four Queens on a board (Puzzler, April 12). He did not bring the solution to me on my own. Here is my solution:

Q: b3 — d1

As you see, it is different from the solution given by you, but better because it is reached in only one move. I am sending you this solution and send me a copy.

Oogstgeest
Holland

Puzzler writes: Kajsas's solution does not involve a move which required that three of the Queens be shifted to other positions. However, my intention was to create a puzzle problem that necessitated the maximum number of moves, and so perhaps all clever columnists...

We were
first,
says H-P

IN a report on the future of the networking world from Burroughs, it says that Burroughs "looks to become the first" to offer the capability to support remote databases. This is

In July 1978, we began delivery of Hewlett Packard Distributed System Net software which supports distributed databases. Like Burroughs system, HP-DSN is used to access remote databases through the use of a job control changes. In addition, remote database access can be implemented directly in the program code. Yet a third alternative is to make use of a Data Base Access file.

This approach is particularly useful in that the user does not have to enter job control changes prior to running a program, nor does the programmer have to hard-code job commands to manage the communication.

The procedures used to establish distributed communication are maintained independent of the application programs which ultimately require the remote data.

Hewlett Packard has had major commitment to distributed processing for many years. To quote the American magazine Small Systems Week, Hewlett Packard "wrote the distributed-system operating software which actually worked."

JOHN KASNIK
Senior Sales Representative
Hewlett Packard,
South Queensferry.

DATA COMMUNICATIONS

Greater choices face users in the Eighties

By Professor Peter Kirstein



UNTIL now data traffic has been widespread over leased telephone lines; complex private networks have been built upon their use. Where the traffic between specific sites has not justified use of leased lines, there has been a large-scale use of the public switched telephone network, PSTN.

A number of new data services will be becoming available during the next five years, and these could have much wider impact.

Prestel is starting its public debut, and the UK Post Office has already announced a £23 million investment plan for this service. Even by official Post Office plans, hundreds of thousands of cheap terminals with built-in modems will be able to access Prestel databanks.

A number of other PTTs have announced similar plans. In addition, a number of private organisations are setting up similar services, and they will be accessible from the same Prestel sets (in some European countries).

Moreover, the set manufacturers are proposing to add other frills, like cassette tapes, video games for the consumer market, and alphanumeric keyboards for the business market. As yet there is no agreement that the sets will be compatible across Europe, but we can hope this will be the case.

The opening and later expansion of international packet switched data services to Europe and North America (PSS and Euronet) will allow widespread access to databanks and computing services on a European scale and to North America. The belief that the use of Euronet will be restricted to bibliographic information retrieval has disappeared; it will be a general pan-European data network.

Increasingly, many users will be able to access specialised data services, like the UK packet switched service (PSS). By the early 1980s, access to Euronet and IPSS will be via PSS. Most major European countries will be providing similar access facilities.

High speed switched access to these data networks will not be feasible under the present PTT standards — only dedicated ports of comparatively high cost for the light user will be available (in the US, PSTN access from packet terminals is provided on Teletex). Moreover, the small number of packet ports privileged, and the tariff rates proposed for annual charges, are clearly interlinked.

A high-speed 24K bps text service, Teletex, will be introduced in some countries. It is not yet clear whether this service

will force de facto standards on all manufacturers of word processors with communication capabilities, or whether these markets will be considered to be as separate as the present Telex and data terminal markets.

A distinct possibility is that the existence of Teletex may cause standardisation in word processor communication interfaces, but that high Teletex charges will tempt use on a direct terminal-terminal basis via the PSTN. Certainly standardisation in this area is urgently needed.

Facsimile service offerings will become increasingly available. Moreover, the different manufacturers' equipment is starting to become compatible. Several European countries are already proposing public services via the PSTN.

One corollary could be that a directory system may become available. At present it is a mystery whether a proposed recipient has a facsimile device at all, and a telephone call is needed to determine his facsimile telephone number (even if it is equipped for unattended operation).

Communication standards for both group 2 (2-3 minute) and group 3 (sub-minute) machines are becoming available. Because the present standards are incompatible with the data network standards, further changes will occur, but the situation should settle down soon.

An Intelpost International facsimile service is scheduled to start this summer between central offices of the Post Offices of a number of countries. At present UK participation will be limited to a single station on PO premises — but onward transmission to customers' premises is bound to follow shortly. A night-time queued service is also under consideration.

The high cost of leased ports to PSS, with the great availability of services expected once one is attached, will cause

great pressure to have private data networks attached to PSS. The PO policy on this point is still equivocal, and standards for accessing individual terminals or hosts on such systems are still non-existent.

What public Value Added Service may be offered in the near future is not yet clear, but a recent Federal Communications Commission filing by AT&T in the US to provide the Advanced Communications Service is a guide to what could be provided. ACS could provide a wide range of transaction and message services.

An easy interchange between the different services mentioned above will be required. For example, it is clear that the information suppliers will wish to input data to Prestel via PSS. People with PSS lines may well wish to use them for facsimile or text, particularly if their traffic in these areas is so low that special dedicated communication facilities are not justified for that purpose. People with Prestel sets will wish to access computers on PSS or Euronet.

These developments will probably require a liberal PO attitude on the connection of terminals to the PO networks, on general licences on the use to which they can be made, and even for Value Added Services.

The usage can be policed only with great difficulty. For example, in the area of teleconferencing it is quite unclear what is allowed. In general, it is very disputable which areas of computer-mediated message services cut across the PTT monopolies, or how these can be enforced. In a recent report* the National Committee on Computer Networks, NCCN, recommended a liberal attitude on this point.

So far I have mentioned Post Office (or in general PTT) attitudes to services and attachments. At least in the UK, the PO does not necessarily have a free hand to decide its own policies.

In the NCCN report, out of 17 recommendations, 13 concerned the PO. The PO union representative on the committee disagreed with all but one of those advocating more liberal policies of the PO. I hope this disagreement does not augur successful union pressure to prevent these sensible recommendations.

Digital private circuits will be starting in 1982/83, and will be fairly widely available by 1985/86. Integrated digital switching, under the aegis of System X, will not become available before that period. For this reason, it will not have a significant impact over the period covered in this article. Under digital transmission, voice can be integrated well with the other services (or vice versa).

The cost of all digital circuits and transmission is tumbling rapidly, and the services we have been describing are based on new plant — and presumably could be priced cheaply. However, from past experience, we can expect costs to rise, but at a slower rate than inflation.

In summary, the private and business user will soon have available a much larger number of data-related services. I anticipate several years in which it will be theoretically possible, but practically difficult, to access these services. For international access, there will be some delays due to incompatibilities, policy problems and lack of directory information.

Customer bases will be somewhat slow to build up — so that the existing telex and telephone will continue to be closed. Directory services will have difficulty in keeping up with the change of subscribers. However, we can expect a qualitative change in the variety and accessibility of data and message services.

* Report of the National Committee on Computer Networks, Department of Industry, 1978.

Data communications are likely to have a much wider impact as new services become available over the next five years.

Facsimile transmission is being revived, with speed and quality greatly improved over the services which have failed to catch on since the turn of the century; packet networks are well established in the US and are now coming into service in Europe; and viewdata services are in various stages of trial in several countries.

In the first article of our data communications supplement Professor Peter Kirstein predicts a qualitative change in the variety and accessibility of data and message services, perhaps encouraged by the report to the DoI last year of the National Committee on Computer Networks.

PTT authorities do not necessarily have a free hand in deciding their own policies. Here Professor Kirstein, of University College London Department of Statistics and Computer Science, outlines some current PTT activities and poses some questions to be considered for the future.

On subsequent pages, articles covering the rest of the spectrum of data communications are contributed by Nick White, Barry Shafeld, Ben Garner and Lyndon Morgan.

Multinational Telecommunications: Opportunities, Costs and Constraints

19-21 June, 1979 London

This international conference will investigate the opportunities offered by recent technological advances in the field of multinational telecommunications. It will go on to review the costs and constraints imposed by PTT regulatory and tariff policies.



Conference Chairman
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Topics under discussion will include:
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By Nick White

software skills we have for some time been encouraging users to adopt standard packages, either produced in our own software house or purchased externally.

Considerable sums have been invested in an integrated materials control package for our major businesses and this is extended to embrace the appropriate financial systems and to integrate with engineering systems being developed in parallel.

A small team of people is producing a continuously expanding range of packages for us.

By separating the use of com-

Logical

Why effective networks are vital for business

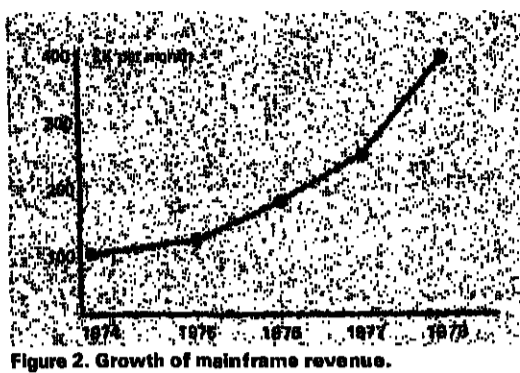


Figure 2. Growth of mainframe revenue

activities can be expanded to match the growth in demand on a business-like basis.

side of the coin to adding value if you like, the tuning exercise being something that only a network operator can know how to do.

Two further questions may be asked. Firstly, do private networks need to offer cheaper communications than public networks to be viable?

Although this may seem suicidal, the answer must be yes. One can return to the educational example. For the education

● Turn to page 22

Post Office Telecommunications

DATA CUSTOMER SERVICE OFFICER

If you've trouble, he'll shoot it.

Prestel's challenge to telex services

By Ben Garner

PROGRESS is hard work. No matter how obvious the benefits may be, improvements to our society do not generally happen overnight. The most able technologists working flat out in several orders of magnitude slower than a futurologist's imagination.

And both are frequently up against the natural inertia of a society which has historically shown a preference for the status quo. Consider, if you will, the tardy general acceptance of such tools as teleconferencing, Confravision, even the humble facsimile transmitter. The technology is there, the economics can be deduced but the users are

a few brave pioneers rather than the masses.

At least data communications does seem set to exert a beneficial influence on our society within the next generation — a society which is being called the information society. No plaudits from this author for the label, nor indeed for the uncontrollable urge of some people to slap labels on any set with a statistical content of two or more.

Viewdata systems are a reality. Systems exist in Britain and overseas albeit with very few users at the moment, of whom only a very tiny proportion are unconnected with the development or exploitation of

the system in some way. Very soon there will be many, many more, and the availability of receivers will rise whilst costs fall as acceptance of the principle gains popularity.

In the very early days, Post Office statements spoke of our own Prestel as being a system for the home user and added the business user as an afterthought. It is becoming clear now that the first serious users will quite definitely be the business community, because it is they who will be more willing to invest in receivers, and thereby pull the unit costs down.

However, it may be a few years yet before the uncommi-

ted family accepts the Prestel set as the norm. Furthermore, it is the business community which will use data from the Prestel pages to contribute to the profitability of its commercial operations.

So much for the springboard from which projections for the future can be made. All that follows is the author's own purely personal predictions for which no guarantee of certainty is given and from which the author, if proved to be off target, will happily absolve his employers.

I believe the basic Prestel service will, almost from inception, develop along three related

lines. As soon as it is established as a general service in this country in the standard form as originally mooted by the Post Office, both the PO's own research people and user reaction will cause:

1. an increased demand for full alphanumeric keyboard in lieu of the numeric keypad, coupled with demands for interfaces enabling the user to interact with prescribed areas of the Prestel system using front-end software;

2. far greater activity in message passing than was ever anticipated; and,

3. development of international standards enabling users to become members of a worldwide community rather than a national club.

Let me take each point separately. The keypad user is interacting with the system in a way which broadcast systems do not allow, but he is nevertheless still rather a passive user. He selects, views and, at best, slots a few numerals into a frame provided.

This is using Prestel as little more than a soft-copy encyclopedia, which is fine as far as it goes, but human nature being what it is people will quickly look beyond that. Psychology students are sometimes set the standard exercise concerning a man running for a train as a means of demonstrating the way in which achievement does not satisfy desire, it merely superimposes greater desires.

Briefly: when the man is running down the platform all he wants is to get on the train. The very second he boards he substitutes a desire for a seat. If faced with vacant seats he doesn't want any old seat, he wants a particular seat. Before long his desire to simply mount the train has led him along a predictable behavioural pattern to a sunny corner seat facing the direction of travel in a non-smoking compartment sparsely occupied by fellow travellers of acceptable appearance.

Prestel users are just getting on the train. They are sure to want to do more than just access files. Front end software (or telesoftware) is necessary for the next step and this requires the user hardware to be equipped with an area of store adequate to accept programs selected from a Prestel telesoft-

BEN GARNER, of GEC Computers, describes some developments he expects to see as viewdata becomes another "natural step in the evolution of the information society," and helps reduce the waste of natural resources as a side benefit.

ware library, and to have available local processing power.

In other words, personal computers have an important role to play in second generation Prestel terminals.

As for my second point, the comes close to a hobby horse ride frequently about electronic mail.

Freight costs; it costs money, it costs time and it costs society a charge on the environment. Go to any railway terminal and see tons of mail about to be physically hauled from one end of the country to the other — and you know most of it is going to end up twenty-four hours later as a waste disposal problem.

The system is unbelievably wasteful and therefore inefficient. It costs trees (for paper), it costs fossil fuels, would be well advised to preserve, it generates pollution and noise.

Previous proponents of this subject have not got much further than discussion papers or feasibility studies. Most have been based on a hybrid scheme usually involving a network of regional facsimile transceiving centres and they have not got off the ground because our society will not accept the idea of other people opening our mail.

Prestel gets over this problem by providing a direct sender recipient pathway. There is of course, work to be done; the present Prestel page size is too small and a good cheap plug-in hard copy printer is needed. At the moment the established telex system has the edge but when in universal use, Prestel will overtake telex since its other features, principally that it is based upon a domestic entertainment device, will cause it to be regarded as a personal, rather than a company, terminal.

And the international aspect? A natural step in the evolution of the information society. Look how rapidly the world has shrunk with the advent of satellite communications and super-sonic travel. We British must rate as the worst in the world for parochialism and our shameful attitude to the learning of foreign languages. Now if I had a Prestel terminal with a full international character set keyboard I could enrol in that language school in Outer Utopia and use my front-end software to dynamically

applications which are not feasible with public networks, including some key closed-user group services.

Again, the answer must be no. One can detect a certain easing of restrictions in this area and it is vital that this trend continues. Perhaps volume-tariffing will be the PTT's route to liberalism. The answer may not be far away.

Whatever the outcome of these vexed questions, one thing seems certain — there will always be a role for private networks and ways will always be found, by the PTTs and the operators jointly, for this vital part of the communications scene to continue to exist.

Role for private nets

• From page 20

separate need rather than competing with public networks (at least in Europe), the price is not the only deciding factor.

The costs must however be predictable, controllable and not prohibitive. Tariffs must be very carefully pitched, particularly volume-based ones, if the public and private networks are to continue to live side by side in harmony performing their complementary functions.

The second question concerns regulatory constraints: Are the existing PTT-operated controls sufficiently liberal to permit private networks to provide all

How to avoid your updates backfiring

THE last 10 years have seen a widespread introduction of computing systems. In particular many organisations have introduced online computer systems with numbers of remote users connected to a central mainframe.

When such systems are first introduced the users will have other methods of processing their work which may be a batch computer system, a manual system or more likely a mixture of both.

To use the new system the users need considerable training but as the knowledge of the system grows so too does their dependence on the service provided.

This is particularly true of systems that provide inquiry facilities, as these soon become the only information look-up method the user has.

The stage, then, is soon reached that without the computer system the users are unable to do their own jobs.

When this stage is reached the onus is on the computer department, having set up the system, to maintain an adequate service level to users.

It must be stressed that the onus is on all computer department staff, analysts, programmers, operators and managers and that the accent is very much on maintaining the achieved level of service and not rushing into a new system with a lower level of service.

While all computer systems will grow because of the addition of facilities they are also subject to change from a number of sources. Although a system may be performing really well constant change can quickly cause a deterioration in the service level.

In this article we shall be looking at possible sources of change and more importantly the ways in which we can control the introduction and effort of such change.

So far we have talked rather glibly about systems, service levels, change and the user. Before proceeding let us make sure we understand what we mean by these terms.

An online computer system is not just hardware and software. An online system is provided to perform a specific job, for instance to process orders. Any action or equipment that goes into processing orders is part of the system.

The service level is a measure of the ability of the system to perform its defined function. Any alteration to any of the component parts of the system constitutes a change, for it may affect the way in which some person or organisation, the user, uses the system.

Note that our definition of user does not exclude computer operations staff. It is particularly important that the operators are considered at times of change.

Let us assume that we have an efficient and reliable system and look at the ways in which we can control any changes we make to it.

There are four basic aims we can set ourselves: 1. to have an effective means of measuring the service level of the system so that any deterioration can be quickly identified; 2. to reduce the incidence of change; 3. to properly control the making of the change; and, 4. to ensure the change does what it is supposed to do and has no side effects.

If we are going to make changes to our system that do not lower the service level we must be able to measure the system in all its aspects. Then over a period we build up a picture of how the system works.

When we make a change, any variation in performance can be detected.

It is important that this system monitoring covers application statistics. That is: numbers of particular transactions, origins of transaction, size of files, as well as genuine performance statistics like response times, peripheral channel usage and telephone line usage.

The worst thing that can happen to any system is that it is subject to constant change. The first step we can take to control the effects of change is to limit the number of times a system is changed.

It is also important to try not to make more than one significant change at a time. If system changes are limited to once a month we can hope to detect any problems or side effects before the next change occurs.

Unfortunately this can only be an ideal. Some problems such as a program error will require immediate change.

However, every effort must be made to limit the number of changes made. Whenever a change is made it is vital that a record of the change is made and that at any time a complete status record of all parts of the system is available.

Without this and a historical record of changes it is impossible to look back at a system's behaviour and see why and where its characteristics changed.

When changes do have to be made their introduction must be carefully controlled.

When changes are being made care must be taken not to make them at times of peak load or critical activity. This requires close contact with all users to let them know the date and exact nature of the change and to resolve any problems this date may cause.

In an ideal world we might expect that all changes could be made smoothly. This is most unlikely even with the best of planning.

Hence there must be a contingency plan to deal with problems caused by change. This is particularly important if the change is such that the previous version of the system cannot be used. All users should be aware of this contingency plan.

All of the ideas contained in this article form part of the plan needed for making changes. No matter how complete a plan is, it is only as effective as the people who carry it out.

As we have already noted, all computer department staff need to be aware of the importance of maintaining user service levels.

At a time of change it is vital that staff have this uppermost in their minds and have the discipline to stick to the rules. Taking short cuts and making assumptions may save time but in the long run invites disaster.

Naturally all changes need to be thoroughly tested and this we shall discuss in some length later. Let us now consider the actual implementation of change.

Changes to online systems, particularly involving data communications, may involve many people and organisations. It is essential that there is a

central control and co-ordination point that schedules all the tasks and ensures that they are properly completed.

Most organisations have a communications control function within their operations department and it is one of communications control's functions to control change.

As each part of the change is complete there should be a controlled handover to communications control.

Essentially this means that there should be a document which details the change, who generated the need for it, who produced it, who authorised its release for implementation and who is the contact in the event of problems.

When this handover is made,

all that needs doing is to tell the operators to load the new version of system on the correct day.

The period of time just after a change is one of careful system monitoring. Some changes will be made to improve system performance, others merely to increase facilities.

The system must be monitored for any effects of the change, for it is this monitoring that records the success or failure of the change and prepares the way for further enhancements.

Communications control will normally bring all system records up to date to record the new status of the system.

With the best planned and controlled change in the world

By Lyndon Morgan

Plans for improving a computer-based service can misfire and lead, instead, to degradation of service levels if the change process itself is not kept under control. **LYNDON MORGAN**, senior consultant in the distributed processing division of the National Computing Centre, offers some guidelines.

and so at best change control can only be considered as a containing operation.

The more resources we commit to change control the more we can control the effects of change and so preserve user service levels.

Many installations have made or consider making large investments in dual systems and standby equipment. The question they should ask is: "Is control change the weak link in their computer management?"

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Univac first with bit-slice mainframes

From front page

tended memory to cache and main memory.

The 1100/80 is based on a research project to do an LSI multi-microprocessor emulation of the 1108 in which a total of seven half-word processors were used to achieve the desired performance. Two parallel micro-instruction streams were used to execute each macro-instruction, while seven streams in parallel were used for memory address calculations. Since address translation is sequential to instruction execution, this approach allows considerable redundancy which is used for error detection and correction.

It is not certain whether this approach has been applied exactly in the 1100/80, but the machine will feature more than one 38-bit processor in each CPU, and one CPU could include as many as 35 of the 4-bit 10800 microprocessors.

Prices for the 1100/80 have not yet been set, but it will feature a dramatic improvement in price performance, and could

prove even more attractive than IBM's 4341. The machine will be directed mainly at winning business from competing manufacturers.

A key attraction of the machine is that it will offer users for the first time a low-cost machine on which to run the mature and highly-regarded OS/1100 operating system.

The performance target was something over one million instructions per second, and this has been achieved; the 1100/80 is rated at 1.2 mips, which is below the 1.45 mips of the 1100/40, but should still exceed the power of a uniprocessor IBM 3031.

The 1100/80 will be the star feature of the series of announcements Univac has planned for the National Computing Conference in New York next month. It had been thought that this would primarily be used as a launch-pad for the successor to the 90 series, but sales of this, particularly the 90/30, are reported to be going so well that the new line may be delayed.

THE PRIVACY DEBATE

International experts pool their difficulties

HARMONISATION of computer privacy laws between different countries looks like being even more difficult than expected following a meeting in Bonn of the privacy commissioners of five European nations and of Canada. Difficulties the commissioners discussed involved, among other things, multinational corporations, the Swift banking network, the airlines' reservation system (Sita) and Interpol.

The commissioners from Germany, France, Sweden, Denmark, Austria and Canada had met informally to pool their experiences and to get to know each other. Many problems were aired but the meeting came up with very few solutions. Paramount among the harmonisation difficulties was widely differing control in different countries over data to be sent

abroad.

This variation includes the question of whether or not a licence is required to send personal data out of the country, and what the legal standing is of people abroad who complain their privacy has been violated. The situation in Germany is complicated by the division of authority between the federal government and the separate states.

The commissioners expounded the multifarious problems they are having in administering their privacy laws within their own countries. Widespread difficulty is being experienced with police and intelligence files, which have varying degrees of exemption from supervision in all the countries concerned.

German commissioner Hans Peter Bull cited the furore that

had been caused recently in his country by an announcement by the intelligence agency BKA that it wanted to store the names of everyone booking flights of Lufthansa for either external or internal travel, in order to help catch terrorists. This idea was strongly opposed by the Ministry of the Interior.

The head of the Danish Data Surveillance Authority, Mr J. Paulsen confirmed a common criticism of privacy laws by describing the difficulty he has in enforcing registration owing to the ease with which files can be concealed.

Both Professor Bull and Inger Nansen from Canada were of the view that Freedom of Information laws as well as data protection laws were necessary to protect privacy. The prospects for such legislation in Germany are not good.

UCSL goes it alone—with profit up 28%

WITH the first announcements of trading details in its 10p history, Unilever Computers' profits for 1978 were £1.2 million, up 28% on the previous year figure of £942,000.

In the past, UCSL's figures have been included in the overall figures of its parent company, Unilever, but it now wishes to be seen as a separate operating company issuing its own accounting reports.

Additional details given that sales revenue for the calendar year 1978 was at £107.2 million compared to the 1977 figure of £84.4 million.

UCSL operates a data processing bureau, microfilm and its sharing services, and maintains a range of portable data capture terminals.

Two conversions in 18 months due to lack of product data

THE conversion programme under way at one medium-sized company in Bristol underlines the difficulties manufacturers create for their customers by not disclosing their forthcoming product plans.

The collective wisdom of the industry says that IBM will at some stage announce Cobol for the System 38 database oriented business computer, but no user dare gamble his applications on that. As a result, the user in question will have to undergo two conversions in 18 months, and will have to start writing new programs in RPG II, even though his existing workload is in Cobol.

The company is Masson Scott Thirrell of Bristol, a member of the Molins Group, which is best known for its capital equipment for the cigarette manufacturing industry.

Masson Scott is also in the capital goods business, making secondary handling equipment for the paper manufacturing industry. It offers no-term maintenance on all its machines, and is still maintaining one which was installed in the early 1930s. It has a potential inventory of 90,000 different parts, many of which it would like to handle on a database.

"We have just installed one of the first of the new E35 models of IBM's System 34," said John Spencer, management services manager at Masson Scott. The E35 model features the integrated 128 Megabyte disc drive, 128K bytes of main memory, and the IBM 10 diskette magazine drive.

"We had to get it from a leasing company," said Spencer. "The best delivery IBM could give us was October, so we have agreed with the leasing company that they will take that machine."

What Masson Scott actually

wanted (and wants) is a System 38, but it also wants IBM's manufacturing, accounting and production information control system package, Mapics, which is available on System 34, but will not be ready for the 38 until October 1980.

"We had to get a new machine as soon as possible, because we currently have an old Honeywell 2020, which is becoming unreliable and needs an overhaul. Our maintenance contract runs out at the end of the year so we need to have the new machine fully operational by then."

"We have 325 programs on the 2020 written in Cobol C. What we plan to do is translate the obsolescent programs into System 34 Cobol — but although Cobol 68 has been available for about six months on the 34, and Cobol 74 is due shortly, we can't start writing Cobol because the manuals are not available from IBM at the moment."

New applications will be written in RPG II for the System 34; this will of course have to be converted to RPG III for the System 38.

"Two conversions in 18 months is a heavy workload, but we are prepared to do it because we are satisfied that a System 38 with 1,200 Megabytes of disc and an initial 18 VDUs, growing to about 30, will meet all our requirements for the foreseeable life of the machine."

Needless to say, a user putting this amount of thought into the development of his system does not decide on his next machine overnight.

"Honeywell wanted us to move to a Level 64/20, and told us we could run in emulation mode and never need to convert our 2020 programs."

"But they took us to see several users in the UK and in West Germany, and the

majority of them told us that the emulation facility was a drain on the resources of the machine, and all the users running said they wished now they had converted to Level 64 native mode straight away."

"But we wanted a database and we anyway were not prepared to make such a big new investment in hardware at that stage."

Among the other machines considered was the Univac 90/30, which generally found favour but was finally rejected on the grounds that it is coming due for replacement with a newer model.

All in all, Spencer sounds thoroughly satisfied with his chosen growth path, seeing the obstacles in the way as a challenge.

Thatcher axe over NEB firms

From front page

for the UK software industry to have a presence in the US. His company had only accepted the NEB's minority investments because of the existence of the overseas capability.

A representative of CAP-CPP, the first company to join Insac, said Insac was making "quite a considerable contribution" to the expense of its US marketing office at Princeton, New Jersey. CAP itself would have to cover these itself if Insac is wound down.

So far Insac is known to have picked up US business for only one of its members, SPL International, which has a contract with the US graphics systems builder Calcomp.

Pat Coen, chairman of Logica VTS, the first associate of the NEB office systems company, Nexos, said that it was too early

to comment on the possible effect of Nexos being run down.

Data communications equipment manufacturer, Case, which is 49.9% NEB-owned, said that a rundown of the NEB would narrow Case's sales and product development opportunities, while Ferranti, in which the NEB has a 50% share, refused to comment on the consequences of an NEB sell-off.

The prospect of the NEB holding in ICL being offered on the market has caused the share price to drop. From an all-time high of well over 600 pence the election was called the price has slid back and was below 480 before the Queen's Speech.

Data Recording Instruments, in which the NEB has a majority share, is involved in litigation over the NEB-funded disc manufacturing venture that it plans to set up with Control

Data (CW, May 3). DRI minority shareholder, Grundy (Teddington) is trying to kill that venture.

Last week the NEB published its 1978 annual report which showed a pre-tax profit of £31 million, but this became a loss of £41 million after allowing for the extraordinary costs of the closure of unprofitable operations at BL. The car maker accounted for more than £3,000 million of the NEB's £4,157 million.

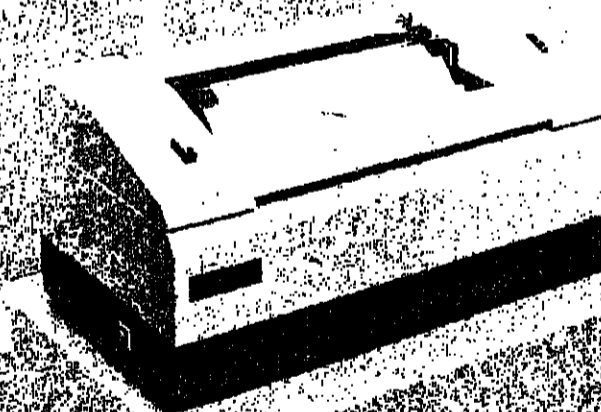
It's now Scicon and that's official

SCIENTIFIC Control Systems — best known as Scicon — has officially changed its name to incorporate its widely known trade mark, originally invented by Computer Weekly. The company will in future be called Scicon Consultancy International Ltd.

Suspended

PURGING of social security scrummers in Massachusetts by cross-checking of computer files has been suspended by order of a federal judge, who said the investigation should have been conducted according to the stricter rules applicable to probes of criminal fraud.

The French Connection



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and exercise control of data. For is it reasonable to permit such autonomy that data remains unshared? Is it reasonable to permit such independence that all information is isolated, and then duplicated elsewhere, again and again?

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The year of the solid-state Santa Claus...

Yes, it's early days yet
—but not too soon
to plan for Christmas

NEXT Christmas morning children will laugh, trains will whistle, dolls will cry, and wind-up toys will clank, just as they always have. But there will also be a chorus of beeps and buzzes in many homes, and in some a nearly-human voice will methodically run a spelling bee. The computer has come to Toyland.

Yes, Santa Claus has gone solid-state, and as any parent who visited a big toy shop last year must know, he was asked for a bewildering assortment of gadgets. This year there are even more. Some of these play sports, while others play music. Some act like teachers, others like pupils. And most of these toys, in their bright plastic cases, bear substantial price tags.

While there are a few electronic toys and games for as little as £7 or so, most cost £12 to £25, and some exceed £50 when all the options are included. If you happen to have an extra £7,500 in the piggy-bank, you can even get a golf course simulator that uses calculus to put you on Pebble Beach, the famous California course.

There are several kinds of toys and games built around microcomputer circuits and their ilk. Most of the units on the market are single-player games, but some require two or more participants. The single-player games are also suitable for groups of children.

All the games involve either skill or strategy, and some of them require a lot of experience before all their subtleties are mastered. The best of the bunch are fun for both the novice and the master, and grow more interesting with experience.

Some games are based on

sports such as football or motor racing, others on pinball machines. The better offerings let the player increase the difficulty of a game by speeding up play or by other means. A number of the sports games are hand-held, which makes them particularly good for use on trips.

Parents and children are likely to see the resemblance between these skill games and either arcade amusements or TV set add-ons. There are similarities, which will discourage parents whose TV games have been idle since New Year's Day, but there are differences too. For one thing, the new electronic skill games don't tie up the TV set.

A related group of electronic toys involves simulation, often with a science fiction theme. These toys make noises and flash lights as children run the controls of, for instance, a space ship or robot truck. One of the more popular items of this genre is Starbird, which is made by Milton Bradley. It has been offered in the US for a year, and for 1979 will be joined by two other Starbird toys.

Another kind of electronic amusement is the learning game. There are several based on electronic calculators, and they offer arithmetic quizzes or number puzzles. They come from companies which have been successful in the calculator business, or from traditional toy-makers who hope to move into new realms. Typically, the arithmetic drill toys are called "professor" or "teacher" by their producers.

A close cousin of the maths quiz machine is the quiz computer that is used with a book-and-answer module. This kind of

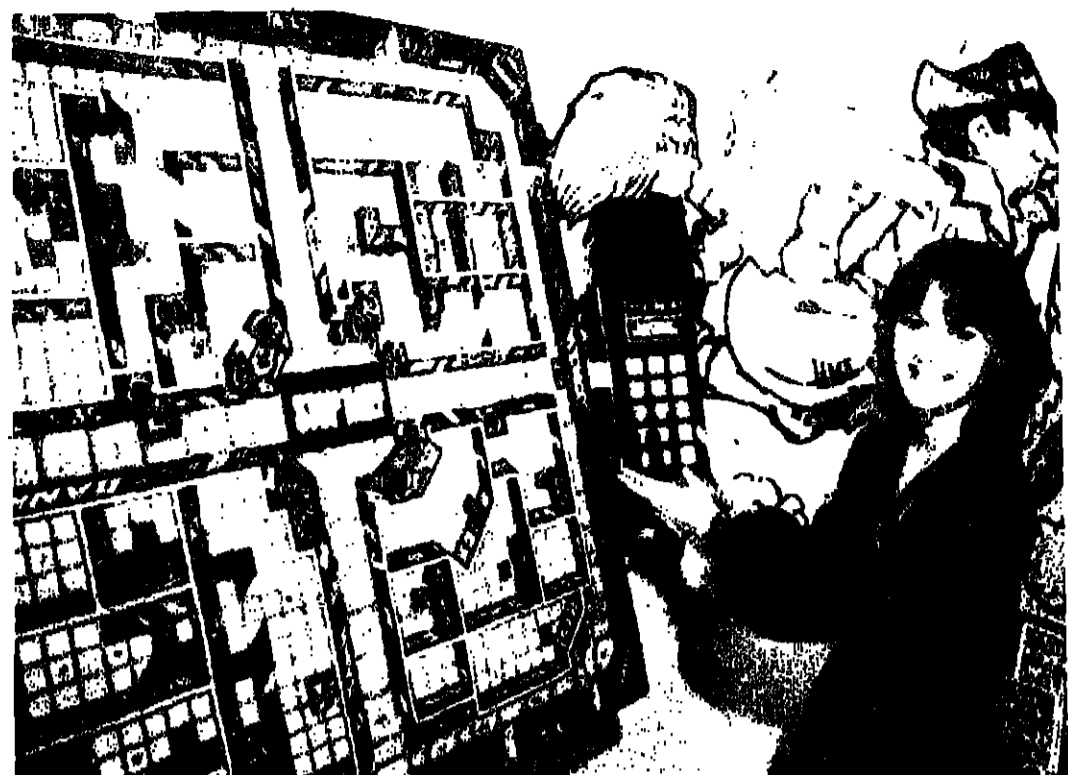
game is the descendant of those old electric quiz units that had two wires and a light or buzzer. When a question and answer were correctly paired, the machine would go bananas. The electronic versions are more sophisticated but appeal to the same type of child.

The most amazing of the learning-teaching machines will give a spelling test, play the spelling game Hangman, and make or break a simple code. Speak and Spell, from the laboratories of Texas Instruments, actually speaks with a synthesised voice. It is built to accommodate interchangeable vocabularies.

These maths, question-and-answer, or spelling games have been characterised as learning aids by some of their makers, but it is not clear that they will help all children to learn. Arithmetic tables and spelling, however, are indeed learned by memory (and the spelling machine is filled with words that defy phonetic spelling), which is the basis of the educational claims.

The question that parents must ask themselves, particularly if they have limited budgets, is whether these games are good value. For some children, £25 worth of well-chosen books may teach more spelling than a talking computer. On the other hand, a spelling bee is a social event as well as a learning experience. Similarly, many games, electric or otherwise, involve counting, adding or subtracting in the course of play.

The most popular of these amusements is Milton Bradley's Simon, which is expected to be bought by a million families this year. Available only in the US and Canada last Christmas, it



Appropriate noises signal the arrival of the law in this game of Stop Thief—presumably echoes of Kojak...

will be sold in Europe, too, during 1979.

Parker Brothers' Merlin is running second; it offers several games in one unit, a feature that puzzles some and pleases others. Both of these devices are made from the same tiny computer, the TMS 1000 developed by Texas Instruments, which comes with varying degrees of memory capacity and computing speed.

Finally, there are several games for two or more players. These are strategy games, and may involve simple rules, as draughts does, or require an understanding of a situation drawn from the world of military tactics.

While European stores will for the most part stock games tried on an American audience last year, Americans will be getting a chance to buy several new products.

Milton Bradley has begun to offer electronic toys for pre-school youngsters. These items make sounds and flash lights. But the more advanced products of Milton Bradley are suitable for both children and adults. The most expensive item in the MB line, and perhaps the most expensive game that many Americans will buy next Christmas, is a unit called Microvision.

The basic device contains a microprocessor and various control circuits. Into the hand-held control unit drops a game panel, consisting of a few pressure-sensitive switches, a liquid crystal display field and

some memory. The Microvision set encompasses an elementary version of pinball, a breakout game like those run on personal computers, a slot machine, bowling, a Star Trek war game and a visual puzzle called Mind-buster.

At more than \$50 for the control unit and \$18.50 to \$18.00 per game module (US prices), Microvision appears to be aimed at the affluent toy buyer or, perhaps, the adult who wants toys he can share with children.

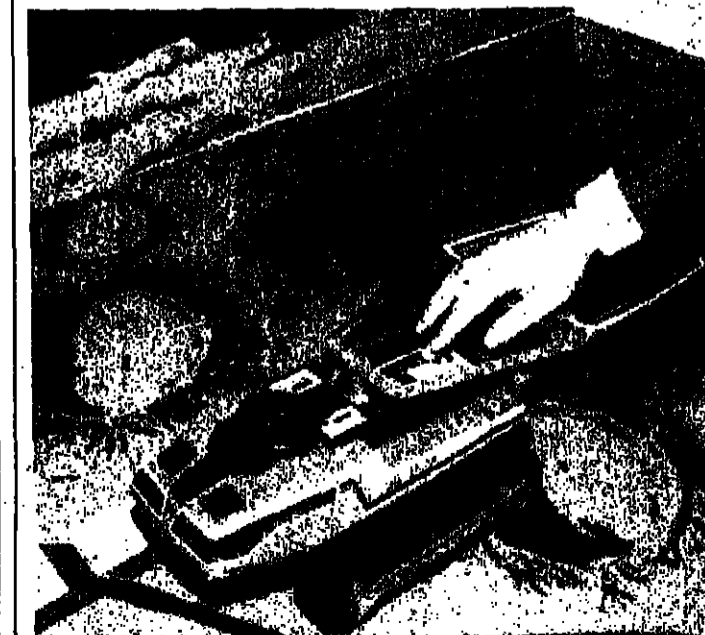
Regardless of the high price, Microvision represents an advance in engineering, and it is likely to be the most successful application of large (about 4 sq in) liquid crystal displays this year.

The other advanced toy from Milton Bradley is a truck which can be programmed to perform various tasks such as moving in various directions, turning, firing "phaser" guns and operating an accessory transport unit that will carry or dump a load of toys under program control. The truck, called Big Trak in the US, will sell for more than £20, and the motorised accessory for about £7.

Milton Bradley's keenest rival in the US is Parker Brothers, best known for its game Monopoly. Parker did well with electronic games in the US last Christmas, and has added several interesting items to its repertoire. Games which have been sold in the US during 1978 will reach Europe for this Christmas.

The item that will probably lead the Parker Brothers line in 1979 is a hand-held pinball machine called Wild Fire. It makes noises (and even has a volume control), keeps score for up to four players and can, in a simulated way, be tilted.

This machine will cost around £20, making it the most expensive item in the Parker Brothers 1979 range.

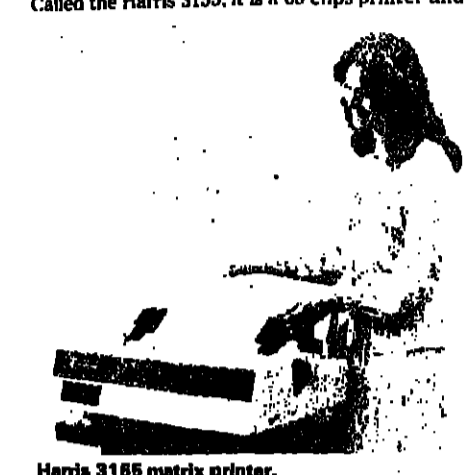


No technology here: a truck which can move in various directions or operate an accessory unit that will carry or dump a load of toys.

PRODUCT NOTES

Harris' 8000 matrix printer

As an enhancement to Harris' 8000 series, a cost effective matrix printer has been introduced. Called the Harris 3155, it is a 60 cps printer and



Harris 3155 matrix printer.

like the other system in the 800 series, is compatible with IBM 3270, Honeywell 7700, Univac Uniscope 100/200 and Burroughs TD800. Harris designed the 3255 for users who require small clusters of displays where the actual print time and number of displays accessing the printer is relatively low. The printer is also suited to provide local print.

The 3155 is housed in a desk top unit, but an optional print stand is available for users who require a free-standing unit. The printer can be located up to 2,000 feet from the controller. It features an automatic on/off control which turns the motor on when a print or paper movement command is received, and off 10 seconds after completion of a print operation. This reduces motor noise and unnecessary wear. Multi-part or non-standard forms may be used, and the tractor feed mechanism can be adjusted to accommodate paper widths up to 17.5 inches. Print characters are available in Ebcidic for 8170/8180 systems and in Ascii for 8210, 8220, 8180 and 8770 systems.

Harris Corp (CW), Data Communications Division, 145 Farnham Road, Slough, Berks. Tel: 0753 34066.

Kardex filing range

DATA carriers for word processors, accounting systems, phototypesetters and other advanced computer controlled equipment, are now available from Kardex Systems as part of their reference equipment range to accommodate floppy discs. For filing the discs is on an A4 panel with a rod type hinge which will fix existing units; easel binders, desk stands, wall brackets and rotary discs is a pouch which will hold up to 10 discs.

Both the pouch and the easel binder, which folds flat and is half when not in use, fit into a Kardex insulated data safe for security and protection.

Kardex Systems (CW), 2 Dyers' Buildings, Holborn, London, EC1. Tel: 01-405 3434.

Tape drive

THE Facit/DEI high density tape deck stores 17.28 Mbytes on a single 1/2 cartridge. Four-track serial recording at 6,400 bpi density provides 17.28 Mbytes storage capacity with a 450 foot cartridge. Transfer rate is 192K bps. The deck from Facit Data Products, is designed for OEM users and qualified end users.

Facit Data Products (CW), S-105 45 Stockholm, Sweden. Tel: 46-8-738 60 00.

Recorder

A DIGITAL cassette recorder which can store up to 360K bytes of data on a standard C80 cassette has been introduced by K and N Electronics. The recorder known as the Datadec 701, uses a circulating buffer store. Error checking is built in and if an error occurs a visual display read-out will indicate the corrupt block number. The Datadec 701 is switch selectable from 75 baud to 600 baud through the standard bit rates.

K and N Electronics (CW), Cordwall Street, Maldenhead, Berkshire. Tel: 0628 22447.

Diversifile

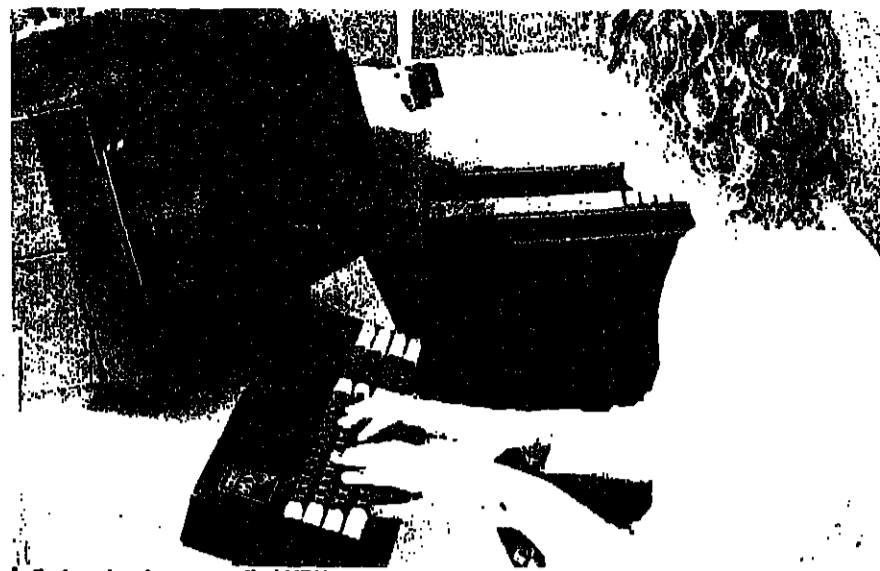
THE Diversifile from Flexform performs 12 functions, including paper securing attachment. From a basic file, accessories for a particular use can be added, and the Diversifile is inexpensive and hardwearing.

Flexform (CW), Euston Road, London NW1 3DT. Tel: 01-357 0182.

CPU floppies

THE peripherals division of CPU Computers, have cut the price of their floppy diskettes. A comprehensive range of 8 inch and 5 1/4 inch single and double density floppy diskettes, which can be used on all leading makes of floppy disc drives has been reduced by up to 50%.

CPU Peripherals (CW), CPU House, Copse Road, St John's, Woking, Surrey. Tel: 04882 73883.



Pericom's micro-controlled VDU.

6803 VDU from Pericom range

PERICOM have announced the third model in its range of microprocessor controlled visual display terminals. The 6803 differs from others in the 6800 series in allowing the user to switch between 80 column and 132 column format.

The VDU is primarily designed for use with printers and associated software and

Pericom is offering the 6803 together with its Hycam matrix printer as a packaged KSR alternative which allows simultaneous display and print up to 9,600 baud or selective screen printing.

As with all the 6800 series, the 6803 offers a detachable keyboard, plus a 15 inch anti

glare screen with green characters. Display features such as cursor address, block transmission, underlining, inverse index and reduced intensity are all available.

Pericom Data Terminals (CW), 1/3 Burners Lane, Kilmarnock, East Ayrshire, Scotland. Tel: 01754 64747.

Raster graphics terminal

AN integrated high resolution raster scan unit which can be used with any computer system and language is the T5600 graphics terminal, made by Sigma Electronic Systems of Horsham.

It has a display resolution of 768 x 512 will operate in X-Y vector, histogram and symbol modes, and produces pictures.

The terminal has a detachable keyboard which provides the full 128 Ascii character set, a TTY lock facility, and a high speed numeric entry pad together with keys for reset, duplex and cursor control.

Sigma Electronic Systems (CW), Church Street, Warham, Dorset. Tel: 01429 504747.



Casio's CQ-81 calculator

Calculating clock

THE latest calculator from Casio is also a quartz digital clock with liquid crystal display. The CQ-81 has eight digits capacity with constants. It measures 128 x 70 x 45 mm, weighs 127 grams and costs £21.95.

Casio Electronics Co Ltd, (CW), 28 Scrutton Street, London EC2. Tel: 01-377 9087.

600 baud O/P

VENTEK has introduced the Model 1004 terminal, for hard copy data retrieval which is compatible and directly interchangeable with visual display units. As a result of this, the need arose for a small but reliable printer. This is the Victor 130 matrix printer which is supplied by Dataphys of Cheltenham. The unit is fully integrated into the 1004 terminal where it operates through an RS232C interface with memory and buffering facilities allowing line by line printing at speeds of up to 600 baud.

Dataphys (CW), 38-40 Roman Road, Cheltenham, Gloucestershire. Tel: 0242 30030.

Shade's low cost convertor

A LOW cost V24/20ma interface convertor for computer users with compatibility problems, has been announced by Shade. The device converts the send and receive circuits of a 20ma terminal into V24 compatible signals and vice versa, providing a quick solution where terminals do not match

computer interfaces. Two convertors can be used where existing V24 terminals are needed, at distances exceeding those allowed by V24 interfaces.

Two mountings are available for the device, a free standing conversion system and a rack mounted system supporting up to eight lines.

Shade Computer Services (CW), 1 Patford Street, Calne, Wiltshire. Tel: 0248 815757.

Model 700 security aid

AN office size security aid, integrator, which destroys confidential material such as microfilm, microfiche and high security documents, is the latest security aid from Volumetix of Coventry.

The Model 700 is the size of a small filing cabinet, is electrically powered and virtually silent in operation. The machine reduces material to a fine powder, which is automatically collected and compacted for easy disposal after it is destroyed.

With a built-in vacuum system which eliminates dust, the Model 700 will destroy all types of film, paper and microfiche. It is 44 1/2 inches high, 21 inches wide and 23 inches deep. It costs £1,895, plus VAT.

Volumetix (CW), Taurus House, Kingfield Road, Coventry, West Midlands.

Power unit

MODULAR Power has introduced a line of modular encapsulated power supplies incorporating current foldback. The main advantages include automatic load sensing circuit which shuts off the output regulator transistor when the output regulator is overloaded. Called the 400 series, it provides a high performance solution for the powering of analogue and digital modules.

Modular Power (CW), 28 Sun Street, Waltham Abbey, Essex. Tel: 01-891 1374.

VDU camera

THE problem of obtaining colour hard copy from graphics or videodata displays has been solved by Graphic Display Systems, with the introduction of the GDS1000C hand-held colour hard copy/Polaroid camera. It is a compact, lightweight, easy to use device. The GDS1000C is designed especially for instrumentation applications such as power supply readouts, multimeters and panel meters. The display is compatible with National Semiconductor's

ASR printer

AN electronic send and receive printer terminal has been announced by Trend Communications. It is claimed to be low cost and a microprocessor prompts the operator in an interactive mode. 8K or 16K bytes of memory are available and a battery back up is provided to retain the data.

Trend Communications (CW), Edrie House, Castle Street, High Wycombe, Buckinghamshire. Tel: 0494 40171.

EPROM

THE 2732, from GEC Semiconductors, is a 32K ultra violet erasable programmable read-only memory, or EPROM. It is pin-compatible with the Intel 2732 and 841K ROMs. Memory size can be changed by plugging in a different device.

The device retains the two control lines of other Intel EPROM and ROM devices. Parameters include an access time of 450 nanoseconds, single 5 volt supply, single address programming and three-state output. Complete programming of the 2732 can be accomplished in 3.5 minutes.

GEC Semiconductors Ltd (CW), East Lane, Wembley, Middlesex. Tel: 01-904 9303.

Shannon tape collars

A RANGE of low cost tape collars has been introduced by the Shannon Division of the Daktar Division of the Shannon Limited. The "DAC" collars are made of rigid plastic and are available in three sizes to fit 2,400ft, 1,200ft and 600ft magnetic tapes. Tapes can be easily fitted into the collars by using a locating band at the near edge.

Shannon Datasort Division (CW), The Shannon Limited, St Margaret's Road, Beckenham, Kent.



One of Shannon's tape collars

3 1/2 digit LED

A THREE and a half digit, half inch high, light emitting diode display is one of the latest products in National Semiconductor's optoelectronic products line. Known as the NS3438, it is designed especially for instrumentation applications such as power supply readouts, multimeters and panel meters. The display is compatible with National Semiconductor's

ADD3901 DVM chip and other DVM chips. From other manufacturers, it can be connected by PCB type terminals on the edge of the display. It features separate address inputs for digits, sign and decimal points.

National Semiconductor Ltd, (CW), 301 Harper Centre, Horne Lane, Bedford. Tel: 0234 111222.

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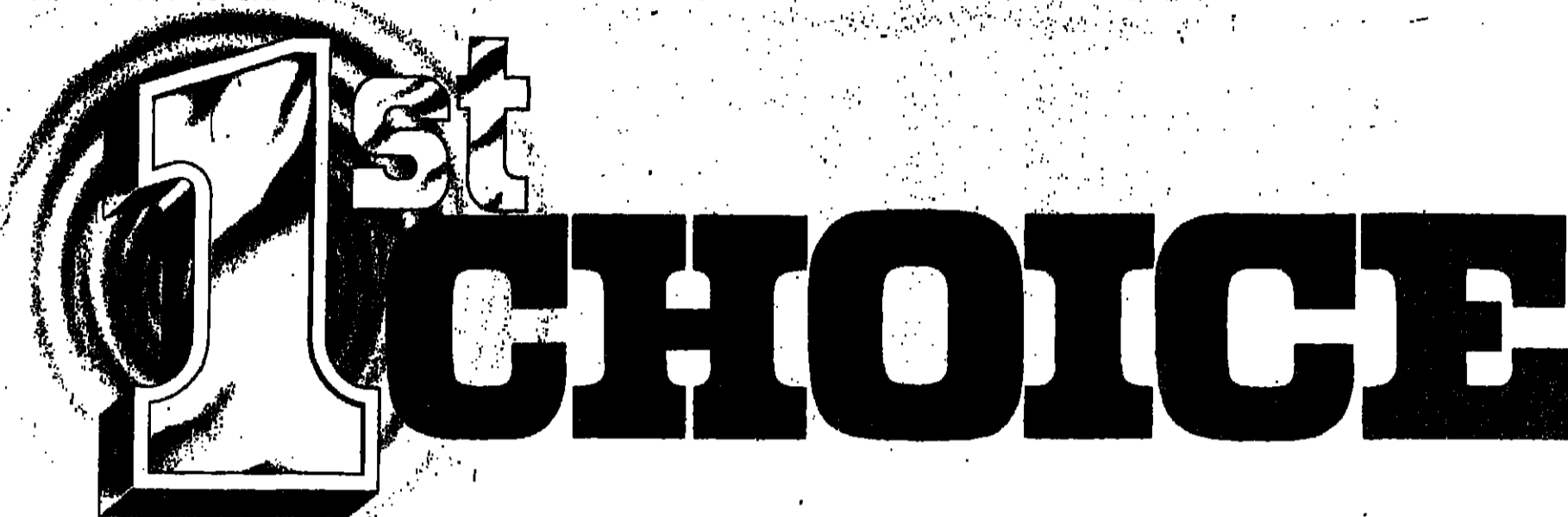
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We have an increasing number of vacancies for programmers with experience of IMS. If you have these skills and would be available to start work at any time in the next three months, a call to Neil or Richard at once would be well worth while.
If you don't generally do contract work you may still find that we can offer you some interesting alternatives. And we're part of the BOC Group — IMS users themselves.

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Call Richard Kaluzynski, Neil Williams or Suzy Gillam for details.

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Permanent Career Opportunities for Operators

BURROUGHS B700

A West End company are seeking a Senior Operator/Manager. The job entails checking input and output data, liaising with software houses, and a small amount of operating. A mature attitude & some operating exp. are the necessary requirements.
SALARY: £5500-6000 p.a. Call Sally or Elaine.

WCI

ICL 1900/2900

A large installation in Middx. are now recruiting Operators with a min. of 2 years ICL 1900 George II + exp. to work on a three shift system with subs. staff-canteen, non-contrib. sickness scheme & 23 days hols.
SALARY: £3,700-£4,700 (Snr. Ops. up to £5,700).
Call Sally or Elaine.

MIDDIX

ICL 1901 T GEORGE I

An American banking co. are currently looking for an Operator with 1 yrs ICL exp. to work a 2 shift system. Lots of perks incl. L.V.s and luncheon allowance, non-contrib. pension scheme, free life assurance, mortgage subsidy, personal loans, interest free season ticket loan.
SALARY: £4,000 + S/A. Call Sally or Elaine.

CITY

SYSTEM 3/15D

An Insurance Company in the City are looking for an experienced Data Control Clerk. The job involves setting up jobs & checking etc. Hours 9.30 a.m. — 5.00 p.m. 45p L.V.s, season ticket loan & free life insurance.
SALARY: £3,000-3,500 a.e. Call Elaine or Sally.

EC3

IBM 370/115

A manufacturing company in Herts. is seeking 2 ops. URGENTLY! If you have 18mths-2 yrs exp. on any 370 machine using DOS/POWER, this could be the job you are looking for. 2 shift system soon changing to 3. Company bnfts. inc. subs. canteen, free life assurance & staff discounts. SALARY: £4,500 with a review after 6mths. Call Elaine or Sally.

WATFORD

IBM 370/148

A well known building society are looking for a Shift Leader for their IBM 370 site. The min. exp. requ'd is 5 yrs IBM running under DOS/VS POWER, VM/CMS & CICS exp. an advantage. The company offer free life insurance, a preferential mortgage & excellent recreational facilities. SALARY: £5,200 incl. Call Elaine or Sally.

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JBA

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Our client is a well established and highly regarded German systems house, which has specialised very heavily in software development and high level consultancy. Some of the opportunities available are:

Senior Product Planner

neg. c.£25,000 +

To assist and advise in the planning and design of new software systems and existing product plans; prepare presentations and reports for customers. Experience in all these areas is essential for this very senior position.

Database Architect

neg. from £20,000

To perform high-level consultancy function to both manufacturers designing and developing database software and for other types of clients. A proven track record of preparing and presenting proposals, designing system solutions to Db orientated problems and of managing teams implementing database software is essential.

Communications Specialists

neg. c.£17,500

Task assignments will be in the areas of networking, software design, requirements studies involving packet switching etc. Candidates with between four and eight years experience would be ideal for these positions. Full relocation expenses will be paid, and unusually thorough efforts are made to ensure that the move is carried out as smoothly as possible, especially where a family is concerned.

Contact: Andy Wright.

MVS Systems Installation

Amsterdam

£ neg (v. high)

An ideal opportunity for an individual with a thorough background in IBM Systems Programming and Software to take on a major consultancy role. Obviously, a deep knowledge of MVS is required - and interview could be arranged in Holland extremely swiftly for the right candidate. This is essentially a permanent position but a fixed term contract is also an option.

Contact: Andy Wright.

For further information on any of the above vacancies, please contact the appropriate consultant.

If your qualifications do not match the above positions but you are seeking other opportunities please contact us anyway.
JAMES BAKER ASSOCIATES, International Personnel Consultants,
16 Maddox Street, London W1. Tel: 01-491 4478

Head of Development and Support

West End £9,000 + mortgage

We have been retained by an overseas bank to appoint this senior position, which entails complete management responsibilities for all d.p. activities (excluding operations). The company are currently upgrading their IBM 370 machine and the fairly small existing team will be increased. The initial activities of the appointee will involve re-vamping the overall standards, reviewing the parameters of the various staff positions and ensuring efficient, smooth transfer to the bigger machine. Applicants should be mature and experienced in management, having maintained close contact with the technical aspects of commercial d.p. A banking background and/or awareness of SWIFT, etc. is desirable. An early commencement date would be a real asset. Contact: Mike Creamer.

Programmers & Analysts (INSURANCE COMPANY)

Hampshire up to £7,900 + mortgage subsidy + benefits

One of the most prestigious insurance services companies in the UK with an impressive 40% growth factor last year, are recruiting additional staff for development work. Many systems are under way including installation of a DBM 2 database and a large real-time terminal network. Completion of these projects opens the way for a considerable number of additional systems thus ensuring creative work for the future. Programmers must have at least 18 months COBOL experience in a batch or real-time environment. Analysts should have real-time commercial or accounting applications experience preferably at a Senior project level. First class location, outstanding employment package and a realistic career growth. Call for more details. Contact: Mike Creamer.

Systems Analyst

South Midlands

c.£7,500

We have been retained by a large international manufacturing group to recruit a Systems Analyst to design and develop commercial applications. Candidates must have a minimum of five years d.p. experience and have been involved in the design and implementation of at least one system from start to finish. A background of manufacturing and accounting applications would be ideal. Salaries are negotiable according to experience. Large company benefits including relocation assistance where appropriate. Contact: Jim Baker.

ARE YOU FRUSTRATED IN YOUR CURRENT POSITION? SDI JOB SATISFACTION? REMUNERATION? LACK OF ADVANCEMENT?

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SDI, the largest independent DOS, DOS/VS and soon DOS/VSE systems software company in the world has just formed a new group at its Development Centre near High Wycombe (Bucks), to provide Technical Services to the world-wide marketing organisation as well as internally to the Development teams.

If your current job does not offer you the satisfaction and challenges you desire then read on to see if you are the sort of person required for this new team. The positions available are varied and will at times involve visits to customers in all countries in which SDI operates, as well as the provision of technical services to marketing companies and internally to the Development Centre. Initially, there are three positions available:

1. Technical Administrative Officer: who will provide technical and marketing assistance to the world-wide marketing organisation, as well as the creation and administration of various internal training schemes and procedures.
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3. Applications Programmer: who will design, document and write applications suites for internal use.

Successful candidates will also have the opportunity to qualify as Product Specialists and thereby be involved in the launch of new products and features world-wide. You will have the opportunity of joining a dedicated group of professionals who are currently working towards filling the gaps left by IBM's recent 4300 series announcement.

The remuneration package offered consists of:

- Above average salary
- A brand new building offering an excellent working environment
- Relocation assistance where necessary
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If you possess some or all of the following skills and abilities:

- Are a bright self-starting individual able to get on with the job with minimum reference to superiors.
- Consider yourself to have an excellent understanding of DOS/VS.
- Have had some system programming experience.
- Have had some applications programming experience.
- Consider yourself to have an excellent understanding of System/370.
- Have had some experience with GRASP or GRASPVs (desirable but not a prerequisite).
- Have had some operating experience (also desirable but not a prerequisite).

then why not give Robin Bailey a call on High Wycombe (0494) 20847 between 09.00 and 17.30 weekdays, to find out more, or write to:

SDI, PO Box 84, High Wycombe, Bucks.

HONEYWELL NEW RANGE LEVEL 64 D.P.S.

ANALYST PROGRAMMER TODAY? SYSTEMS & PROGRAMMING MANAGER TOMORROW?

West London £8000

Yes, and the opportunity of taking over a NEW RANGE Honeywell Level 64 installation which will replace the existing hardware. The new machine will support an on-line network linking 22 branches, and other group companies.

The successful applicant will ultimately have responsibility for this D.P. department and will report directly to the D.P. Group Services Manager. Experience should include a strong systems and programming background having been involved on a Honeywell level 64 project from the early development stages preferably through to implementation.

An excellent salary package is available, with the added attraction of probable appointment as the Data Processing Manager, after the initial installation.

Phone Bobbie McCormick on 01-603 7335.



Information Processing People

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NORTON

Norton GmbH in Germany, an affiliate of Norton Company, Worcester, USA, is looking for an

ANALYST/ PROGRAMMER £10,000 p.a.

Norton as a major industrial supplier has plants in 27 countries worldwide.

In Germany we are based in the area of Cologne/Bonn.

The successful applicant will need a minimum of 2 years' experience of Cobol and a knowledge of analysis and implementation of commercial computer systems.

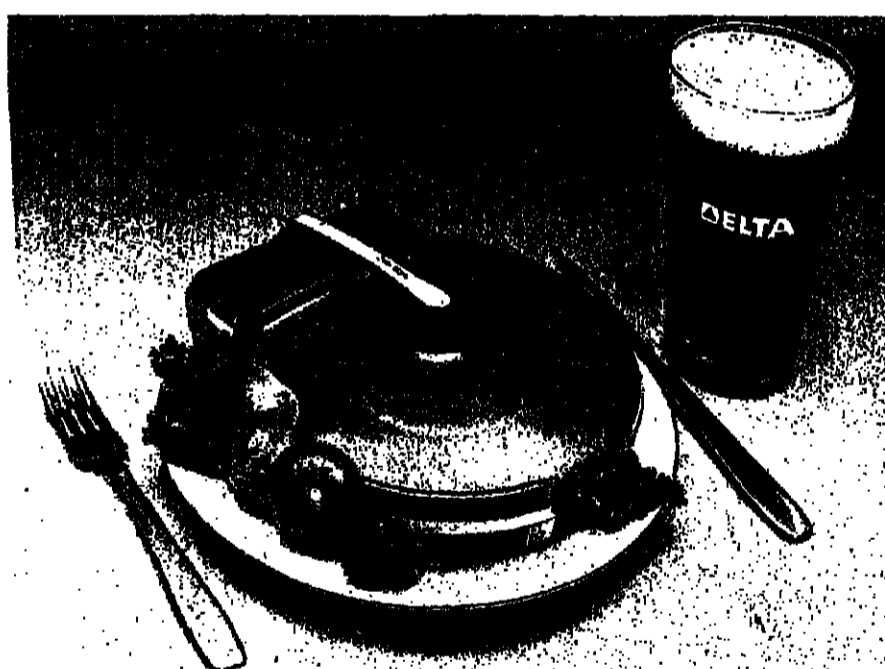
The person appointed will also be willing to learn German.

The salary range is around £10,000 p.a. with excellent prospects as well as other fringe benefits.

Relocation expenses will be paid by the company.

Kindly send your application, including a full c.v., to:

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Postfach 100
5047 Wesseling
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If you've an appetite for production control—we're about to whet it! Systems Analyst— Birmingham

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They now wish to add a Project Leader and two Systems Analysts to their development team. Working in a highly professional environment, the successful individuals will be involved initially on aspects of complex sales and inventory systems, to be implemented throughout Europe.

Project Leader

package to £8000

Ideal candidates will be graduates with at least four years analysis experience gained in a successful large company. Strong exposure to modern management techniques is essential together with an appreciation of programming, although formal training in this area is not a requirement. Project control experience is desirable, together with the ability to lead a small group of ambitious, enthusiastic individuals.

Systems Analyst

to £8000

Candidates should be on the same career path as described in the requirements above, but at an earlier stage. The quality of the experience you have received will be of far greater importance than the quantity. Ambition and dedication together with an open-minded approach to problem solving, are essential qualities required.

These positions represent excellent 'ground floor' opportunities to play significant roles in one of Europe's most advanced data processing complexes, whilst perhaps enhancing your personal quality of life in an area renowned for good housing, schools and recreational facilities. Because of the nature of these positions requiring frequent contact with users at all levels throughout Europe, successful candidates can expect several short European trips per year.

The company has a policy of commitment to training, and suitable courses will be provided, both internally and externally. The benefits package is in line with a major international company and includes relocation assistance where appropriate.

To apply, or for further information, please contact Peter Williams on quoting Reference 1949. Either telephone or write to the address below or telephone his home number, Gravesend (0474) 50342 between 8 and 10pm in the evening or at the weekend.



**Lloyd Chapman
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INSTITUTE OF EDUCATION
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PROGRAMMER A

Applications are invited for the above post in the Department of Statistics and Computing. The successful applicant will join a senior programmer and an operator responsible for providing computer services within the Institute. The work involves the provision of help and advice to research staff and students using statistical packages or writing their own programs, usually in Fortran, and helping with the day-to-day running of the remote-job-entry terminal which links the Institute with all the major University of London computers. A good knowledge of Fortran is expected and knowledge of statistics would be an advantage. The post offers the opportunity to gain wide experience in research computing and will be suitable for a graduate interested in a salary for this post is within the scale £2010-£3887 plus 0802 London Allowance. Further particulars and application forms are obtainable from Personnel, University of London, Institute of Education, Bedford Way, London WC1H 0AP. Closing reference P/BC. The closing date for completed applications is May 21st, 1979.

PARIS BASED

Computer Programmer, strength seeking for American company. IBM 360-370, minimum 10 years experience in PDP 11, Cobol or any other language. Apply to: Comptel, 811, High Road, London W12 8JL Tel: 01-838 0022 (day).

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Tel: 0566-4925
or 30 Baker Street,
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BASIC + PROGRAMMERS

City to £27000 + Mortgage
An International Banking Group require all levels of BASIC+ Programmers to be involved in their new MINI projects.

A minimum of 3 years' experience in BASIC+ is required or, alternatively, good experience in other languages would be considered for people who wish to enter the MINI field.

The Company have several DEC PDP 11 Machines coupled with large IBM Mainframes.
Other attractions include flexi-time, Bonuses, subsidised Mortgages, and loans after 6 months.

Reference HK 20/1

MINI ASSEMBLER PROGRAMMERS

West London to £7500
A small but rapidly expanding Software House based in London are currently seeking Assembler Programmers with a commercial background to work in Customer Support role.

If you have around 3 years' Assembler experience on either Mini's or Mainframes and would welcome involvement on a client contact basis then this opening would be of interest.

The Company offers good salary plus paid overtime and the chance to move into Analysis.
01-439 7871 Reference HK 20/2

SYSTEMS DESIGNER - ADDA

COMPUTERS

West London

to £8000

A new Company operating in the rapidly expanding Micro Market are currently seeking a Systems Designer to take responsibility for development and implementation of their applications Software.

The ideal candidate should be willing to get involved with Systems from feasibility through to implementation. Also required is a knowledge of BASIC on either MINI's or Micros.

The company consider this vacancy to be of utmost importance to their development plans. You would be part of a small team; they intend that the successful applicant will head a systems development team.

Apart from offering an excellent salary this position provides an excellent opportunity to be involved in the rapidly expanding Micro Market.

01-439 7871

Reference HK 20/3

IBM + ICL OPS

IBM 370 DAYS ONLY £4500
Operator with 18 mths+ experience including some JCL knowledge, on any IBM Mainframe, required by Company installing new equipment shortly. Preferred age 21+.

IBM 370 OS £4400
City based installation requires Operators with 6 mths+ experience for their 370+3031 machines. Good career prospects.

IBM 370 DOS £4500
Vacancies exist in all areas for Operators with 6 months+ experience in a variety of installations offering a wide range of benefits.

ICL 1900 £4200
8 mths+ experience on any ICL Mainframe for large bureau. Excellent career prospects include the chance to move into Programming in the future.

ICL 2900 £4500
Financial organisation requires Operators with 6 mths+ 1900 or 2900 experience. Good career path and usual large company benefits.

This is just a small selection of our current vacancies. If you don't see one to suit you, give us a ring anyway, as we always have many others in both London and the home counties, at salaries ranging from £3500-£8500.

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London W1B 7FB

01-439 7871

COBOL PROGRAMMERS

City to £8000 + Mortgage
Two financial organisations operating both IBM and ICL installations are seeking programmers with a minimum of 12 months' COBOL who wish to work in a financial environment, in order to expand on their current experience.

Our clients offer excellent good starting salaries, along with extremely good fringe benefits, including CHEAP MORTGAGE, L/V's, season ticket loans etc.

Reference BP 20/4

SYSTEMS ANALYST

C. London to £8000 + Bonus
A large national hardware manufacturer currently require a Systems Analyst with a minimum of 2 years' Analyst to work in their business systems Division.

If you have a good analyst background in a commercial environment with some programming experience will be of interest.

The company also supply software so there are openings in either the hardware or software side and they are increasing all the time.

They offer a competitive salary plus a car allowance and bonus scheme.

01-439 7871 Reference HK 20/5

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The minimum requirement is 18 months' systems experience gained on any hardware. A programming background would be useful although not essential. The Company offers a very good starting salary together with extremely good fringe benefits including a 4 % MORTGAGE, BONUS, FREE LUNCH, season ticket loans, non-contributory pension etc.

Reference BP 20/7

PL1 OR ASSEMBLER PROGRAMMERS

N. London to £7000
A large manufacturing COMPANY OPERATING AN IBM 370/138 requires a number of programmers to expand their Data Processing department, which is undergoing a major development scheme.

The minimum requirement is twelve months' experience, although the vacancies cover a range of positions and expertise.

The Company offers a very good starting salary together with the usual fringe benefits one would expect of an organisation of this size.

01-439 7871

Reference BP 20/8

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West End

£8500 to £9000+

We are looking for people with several distinct qualities to join our team of consultants; people with the desire to make money, with a flair for assessing and communicating with others, and with the drive to succeed by sheer hard work.

In return for these qualities Datascene will offer an ideal opportunity to use current DP knowledge in a varied and fulfilling role, working with both clients and our own consultants on all aspects of recruitment.

If you have experience within either Systems & Programming, or Operations, and would like more information, please call immediately.

01-439 7871

Reference HK 20/9

OPERATIONS SUPPORT

Sidcup

to £5000

A large International Organisation based in an easily accessible part of N.W. Kent is currently looking for staff at various levels for their expanding technical support department. A minimum of 1 year's operating or data control experience is required, preferably with some IBM OS JCL knowledge, although this is not essential.

The installation is linked via a Data 100 network to a large 370/158 running under OS/VS1. The technical support department operates a flexitime system and therefore this is an ideal opportunity for operators to move from shift work into an interesting and demanding day only position.

There is a recognised company career path which includes the possibility of moving into programming in the future. Excellent staff benefits include discount on a wide range of products, staff restaurant, and an active sports and social club, one of the amenities being a swimming pool on site.

01-439 7871

Reference MH 20/6

OTHER OPS + DATA CONTROL

Burroughs B700 to £5500

Central London Installation is looking for a Senior Operator to take control of the Computer room. Burroughs experience is necessary and there is a chance to learn programming.

Honeywell GCOS £4600

Minimum of one year's experience for Senior Operator. Prospects include the opportunity to move into Programming.

NCR B4 £4500

One year's + experience, preferably using B4, for site upgrading to large criterion.

IBM SYS 3: Data Control £4000

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Computing
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Association

WON 41

Not many employers in the computer

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LOST 2

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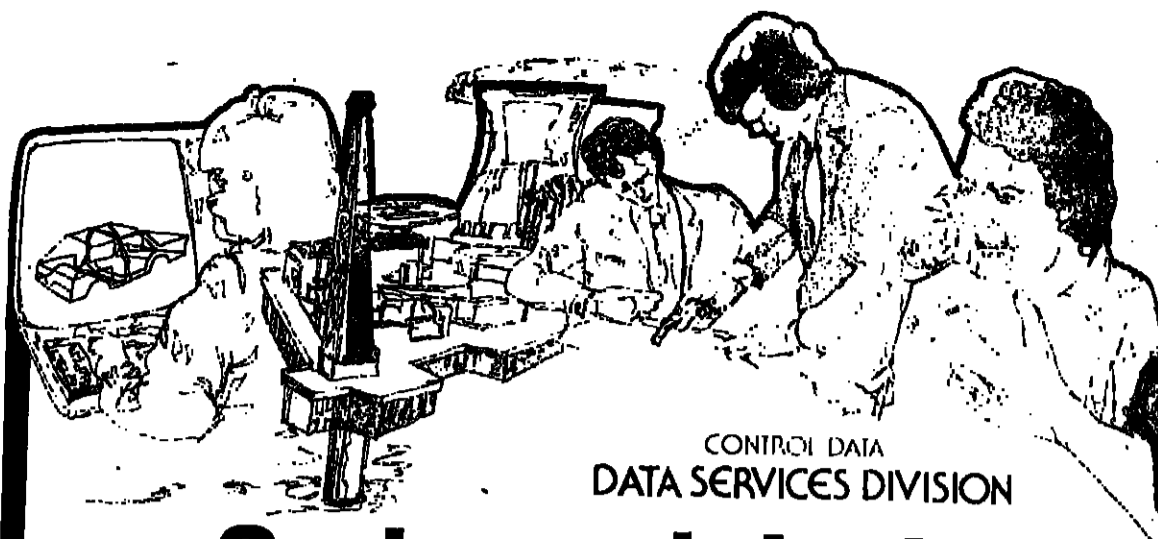
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The duties will include:
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6. In relation to that scheme to set up and co-ordinate the means to communicate the systems and procedures which have been developed.

Applicants should, therefore, have the necessary experience and background to meet the demands of this post and be able to communicate successfully at all levels.

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It is anticipated that interviews will be held on Thursday 27 June 1979. Please quote reference SVN/216/SV



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Due to an expanding volume of work, our clients, a major bureau installation, have asked us to assist them to recruit Systems Analysts at several levels, ranging from Junior Analysts (say with two or three years in DP, including some analysis), to Senior Analysts, with appropriately heavier experience and team leadership capability. There are no specific applications or hardware requirements; the need is for presentable, well-educated DP professionals.

To learn more about these first-class career openings, ring us in confidence, quoting ref. 672CW or leave a message on our answering machine and we'll contact you.

EDP SYSTEMS LTD
52-53 Margaret Street, London W1N 7FF
Telephone 01.637 5796 (24 hours)

Technical Support Engineers There's a rewarding life waiting for you in Europe

Due to the expansion of our European operations, we need a number of hardware and software TSE's to join our fast-growing Frankfurt-based team.

Hardware TSE qualifications:

Minimum 2/3 years experience in large and/or small systems. You will be supporting our European software training programmes. Fluency in one or more languages would be an advantage... however language training will be given where required.

Software TSE qualifications:

You must have experience in operating systems in large computers or with mini's. Ideal position for systems analysts or operating systems engineers. Languages not required.

This is one of the most attractive career opportunities we've ever offered to Support Engineers both in terms of career opportunity and lifestyle. Training will be in the States. We will pay all re-location expenses for you and your family. To give your family every opportunity to fit into the local community we will arrange and pay for German lessons for you and your wife. Obviously finding the right accommodation is vital as we look upon these as long-term appointments. Consequently we will pay your expenses to look for suitable accommodation once contracts are signed.

The salary is around 4,000DM per month with an extra bonus month's salary each year.

If you'd like a more rewarding life for both you and your family, get in touch. Contact Janet Field at the address below or telephone her on 01.572 7455.

Data General
Data General Limited, 3rd & 4th Floor, Houslow House, 724/734 London Road, Hounslow, Middlesex TW3 1PD. Tel. 01-572 7455.

OPERATORS

IBM OS £8000
Two Operators with good OS knowledge are needed for Central London site. Good shift system worked with midweek rest days.

IBM OS £4000
Senior Op. required for N. London site with good J.C.L. experience. Standard perks apply for financial institution.

IBM OS up to £4500
Operators with six months experience are urgently required for companies in Central London and Home Counties.

IBM SYSTEM 3 £3800
Minimum of six months required for Financial Institution as a junior operator. Good prospects into programming.

ICL 1900 £4500
Operators with 18 months GII + or 2800 experience are required for this busy site in The City. plenty of overtime available.

ICL 1900 £4500
Operators are required for this site in C. London, 1 yrs. + GII/GIII experience required, good perks.

ICL 1900 £3800
Buy installation in The City urgently requires a junior operator with 6 months GII/Manual operating experience. This company can offer excellent career prospects into programming, etc.

DEC PDP 11 £5000
Company in City are looking for a senior operator with 2 yrs. + experience with DEC equipment. Some technical background would be an advantage. Two shifts only.

HONEYWELL 6008 £4800
Survey site is recruiting operators at all levels. Applications will be considered with other mainframe experience.

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Senior operators with 2 yrs. + experience in DEC equipment are invited to apply for this position offered by a site in C. London. Perks include BUPA and subsidised meals.

UNIVAC £3500
any in S.E. London is currently looking for junior operators. Some experience with DEC equipment would be an advantage. Perks include canteen facilities, Life Assurance scheme and 4 weeks' holiday.

DATA CONTROLLERS ALL AREAS
£3000-£5000

TARGA COMPUTER SERVICES
3 LIVERPOOL STREET LONDON EC2M 7NH 01-283 2751

PROGRAMMER ICL 2903

Visnews, the world's leading and largest television news agency and film production company, need a Cobol Programmer with good knowledge of RPG 2, to complete a small installation team on the verge of major developments. Applicants should have 12-18 months' Cobol experience gained preferably in an ICL 2903 environment. Programming in RPG 2 will be required extensively at first. There will be opportunities to be involved in systems design. Applicants must be able to work on their own initiative.

Salary c£4,600 per annum. Hours 9 a.m. to 5.30 p.m. Monday to Friday. Excellent working conditions in our modern building; subsidised restaurant, staff bus service, car park, social club, 4 weeks' holiday, free Life Assurance and contributory pension scheme.

For further details please phone: Mike Elliott (DP Manager) on 01-985 7733 ext. 316 or write for an application form from:

Mr. Ian Binks, Personnel Manager
VISNEWS LIMITED
Cumberland Avenue, London NW10 7EH

intel

A leader in the field of semiconductors and microcomputers continues to expand its European organization. We are seeking for our Brussels Headquarters office a dynamic

Data base administrator (M/F)

- Designs financial reporting systems based on general ledger data base for all European subsidiaries.
- Implements developed applications in close collaboration with Data Processing Department.
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Candidates should have 3 years similar experience, preferably in an accounting/finance environment. Above position requires fluency in English, with only other European language definitely an asset. INTEL offers competitive salaries, attractive benefits and opportunities for career growth with a fast growing organization.

Please apply with detailed curriculum vitae and salary requirements to:
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Mrs. Lorraine Gerard,
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SYSTEMS ANALYST to £8,500

Reg'd by a well known Co. offering many benefits. Must have a degree in Computer Sciences or Physics to work on the systems with a range of system problems, covering electronics and performance problems. W. SURREY

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A progressive co. offering excellent career prospects requires a Programmer with a degree in Electronic Eng. with microprocessor exp. W. SURREY

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c £3,700 +
£637 shift allow

Min. 2 yrs exp. with hardware 2904 & 1904A working under Goo II + prof IBM 370 exp acceptable 3 shifts wks hol Co pension scheme. Interest free season ticket loan. LV's 16p per day. City & E. London

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Applicants must have exp. of 1-2 concurrent applications projects and thorough knowledge of programming using COBOL (RPG, BAL would be an advantage) UXBRIDGE

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Mini or micro processing exp. is essential for small business systems prof. gained in a mainly environment.

ANALYST To £7,300

To give sales support and prepare systems survey. Applicants must have at least 2 yrs. exp. with good business system exp. and knowledge of VME B or IDMS. NR HEATHROW

ANALYSTS To £8,000

To work on development work and redesign existing systems. IDMS exp useful E. LONDON

We have many more vacancies for Programmers of all levels in Surrey, Berkshire, Sussex, Kent, Middlesex, Essex and London

Please telephone for an application form if interested in one of the above vacancies or for details of vacancies in your area.

AMES PERSONNEL

Employment Agency Suite 14, Dryden Chambers, 119, Oxford Street, London, W1R 0PA Tel 01 434 1106

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Salary up to £7145

A systems analyst is required to join a small team of analysts and programmers in the Administrative Computer Unit, which is actively preparing for an information system implementation of delivery of an O2 7004 / 401 and which is currently maintaining an interesting range of technical systems on an ICL 19011

A sound knowledge of COBOL and a good background in ICL hardware and software is necessary together with some on line experience

Further details can be obtained from Mr. M. Smith, Senior Systems Manager (Data Processing Services), The University of Leeds, Leeds LS2 9JT

Written applications should be sent to the Registrar, The University of Leeds, Leeds LS2 9JT, quoting reference number 111/19, by no later than 1 June 1979

ANALYST / PROGRAMMERS

£5,000-£8,000

MOORGATE

Our client is the major multi-national supplier of NETWORK SERVICES, because of the continuing growth within the UK, the central implementation group has additional staffing requirements at all levels. All positions offer:

- ★ Project Participation from Design to Handover
- ★ UK and International Applications
- ★ Flexibility of Hours
- ★ Excellent Testing Facilities via Terminals
- ★ Advanced Software with Proven Technical Support
- ★ Modern Office Facilities

As they provide continuous training utilising modern educational facilities, reinforced by extensive departmental experience, they are seeking Analyst/Programmers with 18 months' to 4 years' experience with high level languages on any hardware.

For further information please telephone GEOFF MARSH on 01-499 4501.

20/1

COMPILER WRITER

£7,000-£7,500 + Relocation

SCOTLAND

Because of promotion, a vacancy has arisen in the compiler group of this mainframe and mini-computer manufacturer. The Scotland-based software group has world-wide responsibility for a significant proportion of the company's range of software products.

The compiler team is engaged on the development of a pascal based language, and the person appointed will take on immediate responsibility for the code generation phase. Clearly, therefore, recent experience with block-structured languages is essential.

The location is an attractive part of Scotland, where there is a good supply of quality housing at economical prices.

Contact TONY BAKER on 01-499 4501 or write to him at the address below.

REF. RW 20/2

SOMETHING DIFFERENT IN D.P.

HOME COUNTRIES + NEGL. Benefits + Relocation if appropriate

With the advent of microprocessor systems, many people's roles will change. Conventionally, when a system crashes it is the Support Analyst or Maintenance Engineer who gets the job of fixing it.

With complex real time systems, a somewhat different approach will be required for this role.

My Client can offer a unique opportunity to learn micro based real time systems inside out. The learning curve will be long and continuous, in keeping with the level of knowledge required.

This is a career opening for someone willing to devote a number of years to becoming an expert in their field.

If you have a DP background and seek something other than a traditional commercial computing career, give me a call and let us discuss it.

GEOFF MARSH 01-499 4501

20/3

PROGRAMMERS

MICRO SYSTEMS DEVELOPMENT IN NORTH LONDON

£ MORE THAN YOU ARE GETTING + GOOD BENEFITS PACKAGE

Do you enjoy programming? Yes, well if you want to stay in programming and not move to analysis, then consider the following:

- ★ Excellent salaries — now you won't have to contract to get what you are worth.
- ★ Opportunities for commercial programmers to transfer to technically interesting work.
- ★ Microprocessor based computer systems.
- ★ Offices in North London suburbs (Relocation expenses possible!!)
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- ★ Opportunity to gain highly marketable expertise.
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If you are a professional Programmer give me, GEOFF MARSH, a call and let me tell you how to be properly rewarded for your skills.

20/4

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Applications Programmers Initial salaries to £8,000

Our client is one of the most successful systems companies in the UK, with expertise of the highest calibre contributing to continuous growth and expansion in all areas of computer technology. One of their major growth areas is in the commercial and business systems development field, designing and implementing for applications which usually involve advanced database and on-line techniques.

The management intends to continue offering a wide range of options to their clients, whilst also providing a broadly based technical career to members of staff wishing to develop a thorough background in data processing. Technical expertise is sought in both the mini and mainframe areas. Experience of PDP 11's (RSTS or RSX operating systems) or the ICL 2900 range (under both VME/B or K) would be of particular interest.

Candidates with between three and seven years experience in the industry would be ideal for the positions available, since they would not only be able to contribute immediately to the company's business but will also be able to capitalise more quickly on their experience, to gain higher levels of responsibility and reap real benefits from the excellent career structure within the company.

The usual big company package naturally applies.

Contact: Margaret Stevens,
JAMES BAKER ASSOCIATES,
International Personnel Consultants,
16 Maddox Street, London W1. Telephone: 01-491 4478

Four telephone numbers that could offer a real career and £10,000 per annum

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LONDON 01-486 7777

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Mouncey and Partners require permanent staff as:

- senior consultants/consultants
- technical designers
- analyst programmers
- senior programmers
- programmers

We are looking for people:

- with at least two years' experience in a Honeywell, IBM, ICL, NCR or UNIVAC environment
- with a professional attitude to work

Mouncey and Partners offer:

- some of the best salaries in the business (yes, we do actually pay £10,000 per annum)
- excellent career prospects
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- free BUPA for the whole family
- non-contributory pension scheme
- a personal environment where people matter
- positions in a long-established company (1962) with an excellent reputation
- different remuneration packages (including car scheme)

Mouncey and Partners is not a large software house/consultancy. We employ approximately 60 people. However our growing business both at home and abroad has created the above career positions.

Start by calling 01-486 7777 and ask for Janet, John or Mel, or drop us a line at 13-14 Cornwall Terrace, Regents Park, London NW1 4QP (near Baker Street Station). We will make you an offer within 72 hours if there is mutual interest.

MICROSTAR ★★★★★★

EXPERIENCED ANALYST AND COBOL PROGRAMMER REQUIRED

Our client is the UK Marketing organisation of a major international group. Within the Guildford head office, the data processing function is well-established into most areas of business activity. Processing is on a network linked to IBM 3033's in the corporate data centre. Intelligent front-end processors support local and remote offices to provide on-line services in either stand alone or remote batch mode. Current planning envisages upgrading the terminal processors to provide extensive online data base facilities.

ANALYST

Experienced Analyst is required to undertake feasibility studies, analysis, design and implementation of systems. It involves supervision of programmer support and liaison with users to maintain and expand current activities. At least 2 years' experience of project development is needed plus knowledge of COBOL programming. Additional experience of Data Base/Communication/Real Time Systems would be an advantage.

Salary to £6500

SENIOR PROGRAMMER

Salary to £5500

With at least 3 years' experience of COBOL programming and capable of writing program specifications from systems plan. Includes supervision of junior programmers.

This is a challenging environment with the opportunity to participate in the latest development in Distributed Processing.

Write, in the first instance, to Robert G. J. Wood, MA,
who is advising personally on this appointment at
Microstar Limited, Hitherbury House
97 Portsmouth Road, Guildford Surrey GU1 7 5DL
Telephone Guildford (0483) 33031

★★★★★ MICROSTAR

SOFTWARE ENGINEERS required near SOUTHAMPTON

Computer Instrumentation Limited, a growing company based at Chendlers Ford near Southampton, design and manufacture specialist computer systems, associated peripherals and other electronic equipment. Expansion has resulted in the following opportunities for experienced personnel with suitable qualifications.

SOFTWARE DESIGN ENGINEER circa £8,000

To produce software for a range of intelligent computer peripherals. This software will comprise both microprocessor "firmware" and mainframe support packages. Other projects involve designing application software for computer systems for a wide variety of engineering problems. Suitable candidates should have a scientific or engineering background, plus wide experience of computer systems from the microprocessor level up to mini or mainframe computers. Most of the software will be written in CORAL 66 or Assembler, with some FORTRAN work. A qualification in Mathematics or Computing is desirable, although not essential for someone with the right experience.

SOFTWARE MAINTENANCE ENGINEER £6,250 +

The duties of this position will include software installation, some software design and provision of a software maintenance function for the Company's customers. This last duty will involve personally solving customers' software problems, but also setting up procedures within the company for handling software maintenance problems speedily and efficiently and releasing solutions on a general basis. Candidates for this position should have a similar background, experience and qualifications to those detailed above for the design engineer.

Please telephone or write to:

Peter de la Nougère
Technical Manager
COMPUTER INSTRUMENTATION LIMITED
School Lane, Chandlers Ford, Hampshire
Telephone Chendlers Ford 68321

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Further information from:

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780111 Ext. 224, or postcard the

course organiser David Hyndman

Box 311.

University of Edinburgh

Edinburgh Regional Computing Centre

COMMUNICATIONS

PROGRAMMER

Applications invited for a programmer to join

a team working on the development of a

series of the data's communication system.

The network includes 800 terminals, 100

terminals and 1000 local processors connected

to the data's mainframe (IBM 3033) and

two 4-700 and to the computer of the

University of Edinburgh. The network is

designed to be a model for the future

of data's communication system.

Do you have?

- An understanding of accounting principles and procedures
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 - A desire to be totally responsible for customer service and can you supplement it with
 - Knowledge of payroll, invoicing or stock control
- or
- Experience in a computer bureau environment

Then we would like to hear from you urgently regarding our vacancies for Customer Service and Development Consultants in order that we can meet our planned growth objectives. Starting salary **£6500-£8000** according to experience plus a comprehensive package of company benefits.

For an application form or further details, contact:
Shelagh Tills, CMG Computer Management Group
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Greenford, Middlesex, UB6 9BW. Tel: 01-578 4563.
Quoting Ref: M/8.

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SYSTEMS PROFESSIONALS

SALARY TO £10437.42

Paramin (U.K.) Ltd, being the recently formed subsidiary of a prestigious American systems house, wish to recruit highly qualified professionals, who feel that their expertise and ambitions may be more fully realised in an informal but professional organisation.

Remuneration: We agree that the figure indicated above, whilst being realistic, also served to attract attention. This level of salary is certainly payable to the right people, in fact, exceptional expertise will warrant exceptional salary in excess of £11,000 per annum.

Opportunity: Being a newly formed company, scope for personal expansion is only limited by personal ability. The company intending to open further British offices in the near future. For this reason, we wish our staff to not only be highly qualified technically, but also to possess a good level of business awareness.

Location: Location of business premises is currently undergoing investigation in both the Midlands and Guildford areas.

Travel: The majority of our projects are located within easy commuting distance of our office. However, for those so inclined, we can offer opportunities for travel in Europe, North America and Japan.

Ideally, the people who work with us will meet most of the following criteria:

- Degree in a science subject
- In-depth knowledge of DEC hardware and software
- Substantial experience with system design
- Expertise in leading a communications design team
- Serious interest in the microprocessor industry
- Skill in at least two Assembler languages
- Minimum of five years' industry experience
- Consultancy experience

If you feel it is worth discussing our company, call NIAL DUGGAN on (04862) 20261 to arrange an informal meeting.

Paramin (U.K.) Ltd., South Close, Horsell, Woking, Surrey GU21 4TB.

Computer Operations MANAGER GLASGOW CIRCA £5800

A rapidly expanding computer services group offers the new post of Computer Operations Manager for their Glasgow installation.

Reporting to the Computer Services Manager, you will be responsible for the day-to-day Data Preparation, Data Control and Computer operation functions. You should have the ability to adhere to predetermined work schedules and maintain operational efficiency at an optimum level. You will be required to procure the necessary operational statistics for managerial control and also supply security and control systems to the departments under your supervision.

You are at present involved in running a computer operations department and have experience of ICL computers (preferably 2904) and key-to-disc data preparation equipment. It is unlikely you are under 25. Salary will be around £5800 with normal fringe benefits.

To apply phone Karen Miller 041-221 7044
PER, 48 St Vincent Street, GLASGOW G2 5TS.
(Answering Service outside normal hours).
Applications from both men and women are welcome

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CSC

Canada

Sales Representative Computer Services

Computer Sciences Canada Ltd., a subsidiary of Computer Sciences Corporation, the world's largest independent company in the computer services industry, has career opportunities available for experienced sales representatives. We're looking for individuals who have a formal academic background in science or business, with at least two years' successful sales experience selling time-sharing, computer services or mini-computer products.

Total compensation will be based on strong salary level, plus high potential commission, offering both income stability and upward growth. In addition to the excellent compensation package, CSC offers an employee benefit package that is above average.

Interviews will be held approximately mid-June. For more information on the above opportunities, please forward your resume to:

Mr. T. McDermott
c/o Nationwide Advertising Service Inc.
NAS House, 42a Bow Lane, London, EC4M 9EU

Programmers Competitive salary + car

We have a large dual processor IBM installation and are professional, forward looking, part of the international Laing group, and based at Borehamwood, Herts. Our opportunities, for support programming on IBM mainframe equipment, will add prospects and a car to your career.

Candidates should have at least three years' sound programming experience including a minimum of 1 year's involvement with COBOL and 6 months' experience of IBM equipment. The ability to work with minimum supervision is essential.

The duties will include the maintenance and modification of a wide variety of batch and on-line systems. Our diverse range of projects may give rise to some involvement in new development activity or alternative equipment such as dispersed mini- and micro-computers.

Competitive salaries plus company car, and some assistance, if appropriate, with relocation costs, together with a leading package of benefits including over four weeks' holiday, reflect our desire to attract top-flight personnel for this function. Candidates with less experience but the potential to qualify for the above rewards at a later time should also apply.

For further details or application form, please write or telephone:
D. C. Madden, Personnel Manager,
Group Personnel Services, John Laing Limited,
Page Street, Mill Hill, London NW7 2ER.
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LAING

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Data Communications

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Reading, Birmingham, Manchester

Responsible for the installation of our comprehensive range of equipment and its subsequent on-site performance.

Applicants should have a sound knowledge of data terminal equipment and/or telephone lines together with a

basic appreciation of logic circuits. A company car will be provided and overtime and stand-by allowances will be paid.

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Who will fault find on, and repair, PCs taken from sophisticated data communications equipment at our Reading and Manchester workshops. Applicants should therefore be experienced in the repair of digital and analogue circuits.

All positions offer attractive salaries, generous leave entitlement and benefits one would expect in a successful company.

Ring for an application form, or write with personal and career details to:
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APPLICATION ENGINEER

U.K. Subsidiary of an OEM computer peripheral equipment supplier require an experienced Engineer for the following activities.

1. Design of the new features mainly for sophisticated Printer/Terminals.
2. Modification of standard micro-processor firmware.
3. Changes on keyboards and printing elements for Foreign languages.
4. Application of European safety and interference regulations.

The work will require travel throughout Europe and to the U.S. manufacturing base. The successful applicant should be familiar with design, manufacturing and service problems and have adequate experience with micro-processor based systems, digital and analogue circuits.

A very good salary, four weeks' holiday and excellent Rank Xerox contributory pension scheme are offered.

Applicant please contact:
Petr Benas, Technical Director Europe
DIABLO SYSTEMS LIMITED
Regent House, 20 The Broadway, Woking,
Surrey
Tel. Woking 71991



COUNTY TREASURER'S DEPARTMENT SENIOR COMPUTER PROGRAMMER

(C/D 113) - CARMARTHEN

Grade: APS 04773-05073 inclusive of supplement

Applicants for this post should have appropriate training and experience.

A proven record of achievement as a COBOL programmer is essential; a working knowledge of another language and of the George 3 Operating System will be an advantage.

The Council has an ICL 1904S computer with communications links to its District Councils and to various schools.

Application forms, returnable by 31st May, 1979, are available on receipt of a stamped addressed envelope from the Director of Personnel and Management Services, County Hall, Carmarthen. CANVASSING DIRECTLY OR INDIRECTLY WILL DISQUALIFY.

Computer Engineer

Telecommunications

The Midlands Electricity Board is responsible for the supply of electricity to an area of some 6000 square miles and to nearly 2 million customers.

The Board needs a suitably qualified man or woman to join the Operations and Telecommunications Section in its Birmingham Area.

This appointment mainly involves working on a computer system for distribution network control and the duties will include preparation, modification, testing and documentation of the software associated with the system.

Applicants should have experience with programs for an on-line control system or alternatively have experience in the operation and control of a power distribution network combined with an interest in computer applications.

Salary will fall within the range £4230 - £6215 p.a.

For candidates who satisfy certain requirements in training and qualifications laid down by the industry, there could be opportunity to progress to a maximum salary of £7230 p.a. Salaries are currently under review.

Excellent conditions of service include - 38 hour week, generous holidays and sick pay schemes, superannuation and free insurance schemes, sports and social facilities and staff restaurant.

Applications by letter from men or women quoting Reference CW stating age, qualifications, full details of experience, present position and salary to Area Manager, Midlands Electricity Board, Birmingham Area, 18 Summer Lane, Birmingham B19 3SA. Closing date for applications 28 May 1979.

M-E-B
MIDLANDS ELECTRICITY

SOUTHERN CLIMBS

Boysen High	Systems Designer (Micro/Mini)	£7,500
Bulleford	Senior Programmer (Bursar)	£7,500
Farnborough	Systems Programmer (Basic)	£7,000+
Leatherhead	Senior Operator (Bursar)	£6,000
Farnborough	Consultant (Systems House)	£6,000
Reading	Training Programmer (ICI New Range)	£5,500
Woking	Project Leader (Bursar)	£8,500

These are but a few of the 100+ vacancies we are currently seeking to fill.

BOB WILLIAMS KNOWS THE SOUTHERN MARKET and can be relied upon to arrange interesting and relevant interviews. Telephone today for an early interview.

Ambridge Personnel
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GUILDFORD (0431) 65668

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RECRUITMENT AND CONSULTANCY SERVICES

Greenock House, 19 Cuckfield Road, Hurstpierpoint, Sussex

Telephone: 0273 833848

SPECIALISTS IN DP AND EXECUTIVE RECRUITMENT

REF: CW/11/79

HOLLAND

ANALYST PROGRAMMER HARDWARE TECHNICAL SUPPORT CONSULTANT

We are acting for one of the world's leading international companies, specialising in D.P. communications with a reputation being second to none. These are opportunities for you to develop your career within an environment dedicated to the development of teleprocessing, utilising the very latest technological developments and skills. Our clients expect to offer successful candidates the required level of product training.

ANALYST/PROGRAMMER

1. You will be experienced working within a technical support capacity working with a sales force, as well as clients, in a pre and post sales role.
2. The successful candidate is likely to have been actively involved within an IBM based T.P. environment for up to three years and possess a good understanding of Access methods, as well as applications sub-systems and programmable communications controllers.
3. The ability to speak a language other than English is not mandatory, but you are likely to be a good communicator.
4. Those people wishing to broaden their experience within a very progressive and dynamic organisation should apply.

HARDWARE TECHNICAL SUPPORT CONSULTANT

1. Ideally you will have had experience working with major mainframe hardware, with particular emphasis placed upon the utilisation of front end processing equipment within a teleprocessing environment.
2. You will have the ability to act in a systems support role within a marketing environment and be able to accept a high level of responsibility.
3. It is likely that your experience will be technically based with an interest in problem solving and ensuring an acceptable level of hardware systems performance.
4. The ability to work well with user hardware and software support personnel is essential.

WRITE OR TELEPHONE NOW IN ORDER TO MAKE IMMEDIATE ARRANGEMENTS FOR AN INTERVIEW - EITHER IN LONDON OR THE SOUTH

Computer Manager

Information Systems
Manchester, c. £7,500 + car

This is a new appointment within the publishing division of a diversified public group. The company produces a very wide range of childrens literature which is sold to wholesale stationers and major retail accounts throughout the UK. Responsibilities are for controlling and developing current operational systems on a recently installed inter-active mini computer. Present applications include order processing, sales invoicing and stock.

G. Sable, Ref: 29224/CW
Male or female candidates should telephone in confidence for a Personal History Form to:
MANCHESTER: 061-236 8981, Sun Life House, 3 Charlotte Street, M1 4HB.

Hoggett Bowers
Executive Selection Consultants
BIRMINGHAM, CARDIFF, GLASGOW, LEEDS, LONDON, MANCHESTER, NEWCASTLE AND SHEFFIELD.

DUBLIN COMPUTER OPERATOR

THE IRISH DAIRY BOARD

Invites application for the above post. The successful candidate should have a minimum of 1½ years' experience on a mainframe computer using discs and magnetic tapes.

The Board utilises a 1903T with a George 3 operating system. While experience in either ICL equipment and/or George 3 would be an advantage it is not essential as training will be provided.

A car and current driving licence are essential. An attractive salary will be offered and contributory superannuation scheme.

Please write in confidence giving details before Monday, 28th May, 1979 to Nora Cogan, Irish Dairy Board, Ireland House, 180/181 New Bond Street, W1Y 0HD. Telephone (01) 493 2802/5. Telex 27827.

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(Start £6,000 + Overtime + 2 Litre Car)

Fabulous opportunity to join a leading manufacturer of a wide range of prestige mini computers and peripherals. Excellent prospects include above average growth (43% increase in turnover plus two new branch offices plus 21 new product launches, all in the last year). Helpful friendly young management.
Basic salary £9,000 plus overtime plus luxurious 2 litre car plus training. If you are ambitious, feel capable of assuming responsibility, why not take that all important step forward - living in London, Home Counties, Midlands, West or North call us today but hurry.
Ref. EK2014.

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SENIOR SYSTEMS ANALYST

International computer company, to take charge of small team responsible for materials production and financial systems in a plant based in Central Scotland.

Please hear more on: 01-493 7272

PLEASE JUST LISTEN, YOU DO NOT SPEAK

PROJECT LEADER

MICROPROCESSOR-BASED OFFICE EQUIPMENT SYSTEMS

Our client, part of a major British Engineering Group is a leader in the highly competitive international office equipment market. A position maintained through a vigorous Home Counties based Research and Development facility. The nucleus of this facility is a small project team formed to implement microprocessors in the next generation of equipment. A project leader is required to head up the team. Reporting direct to the overall design manager he will be leading high calibre engineers and technicians with hardware and software skills. The ideal candidate will be a graduate or equivalent in electronics or computing and will have been involved in similar projects through to production. He will also have the ability to interface with other disciplines within the department. Please telephone or send C.V.s quoting reference CW201.

INTERLEX
MINI/MICRO RECRUITMENT

15 London Road
Southampton SO9 4TA
Telephone 0703 28181
Telex 477687 Youngs G

ANALYST/ PROGRAMMER SURREY & LONDON £7000-£8000

Kewill Systems Limited, a management consultancy and computer software house, are currently seeking a systems analyst/programmer with a minimum of four years' experience in the development of applications software and with some experience of small business systems (minis or micros).

The successful candidate will play a leading role in the development of specialised applications packages. Prospects of salary and career advancement are good.

For further details please contact Kevin Overstall, Kewill Systems Limited, 500 Chesham House, 150 Regent Street, London W1R 6FA. Telephone 01-734 5351 (day)

or write to them at 22422 (evening) or 22422 (day)

App 11/79

MYRIAD DP PROFESSIONALS PASS YOUR KNOWLEDGE TO OTHERS LECTURERS

SOUTH LONDON

CIRCA £7500

Our Client, a leading Computer Services Organisation, is seeking additional staff to join their team of DP Professionals primarily in a Lecturing capacity. Experienced Analysts and Programmers with enthusiasm and proven communications skills are required to assist in the training of personnel for both the Public and Private Sectors of Industry, using well established techniques. In addition to lecturing the successful applicants will be required to advise attendees, prepare new course material and generally support our Client's operation.

Applicants should possess skills in at least one of the following areas: Systems Analysis, minicomputers, COBOL, BASIC, PL/I, DOS/VS, Database or On-Line Systems. At least three years in Data Processing is essential and IBM experience would be an advantage.

These are Senior Positions in a highly successful organisation. The company offers a good pension scheme, expenses and salary in keeping with a Senior Position.

Ref. SEI/1705

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30 Fleet Street London EC4Y 1AA
01-353 0981 (24 HOURS)

METROPOLITAN
BOROUGH OF SEFTON
FINANCE DEPARTMENTComputer Services
Division

JUNIOR PROGRAMMERS

AP2/4-43270/54532 (Pay award
pending)
(Inclusive of supplement)

Applications are invited for the above posts from trained Cobol programmers, preferably with knowledge of I.C.L. Software. Although practical experience is desirable, consideration will be given to applicants who have completed HND or other full-time computer courses, or will do so in the near future. Starting salary will be fixed in accordance with experience and qualifications.

A wide range of local government applications are currently based on an I.C.L. 1903T Computer, some on-line inquiry systems and some on-line cash receipts equipment is being installed.

National conditions of service for A.P. and C. services apply and the Authority operates a 35 hour week. Applicants giving details of age, experience and qualifications together with the names and addresses of two referees should be sent to the Chief Finance Officer, Metropolitan Borough of Sefton, P.O. Box 18, Balliol House, Stanley Precinct, Bootle, Merseyside L20 3ND not later than 23rd May, 1979.

Consenting will disqualify and applicants must declare whether they are related to any member of the council or senior officer of the Authority.

**WILTSHIRE COLLEGE
CHIPPENHAM TECHNICAL
COLLEGE**
Cocklebury Road, Chippenhams
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IN COMPUTING
STATISTICS
AND MATHEMATICS**

To teach in the Mathematics and its application sections of the Department to play a leading role in the teaching of computing and related topics in GCE, TEC, SEC and short courses in computing. Appropriate working experience in vital teaching experience would be added recommendation. Letters of application by return to The Clerk of the Governors, Cocklebury Road, Chippenhams.

USA

Banking / Financial
IBM / OS / COBOL
\$20K - \$30K

Ring Joanne Stone
01-278 6426 (day)
0865 7173839
(eves / weekends)

Business Systems Analysts

New Installation - New Opportunities

North Hampshire

Our client, the data processing division of a major UK commercial and industrial group with a turnover approaching £500m, is committed to the long term development of a full range of new applications systems on an on-line distributed processing basis, utilising new minis and mainframes as appropriate to individual user needs.

The successful applicants, who are likely to be aged 25 and above, and possessing a minimum of three years experience in investigating, designing, and developing computerised manufacturing or commercial systems to satisfactorily meet users specific business needs, will be offered excellent starting salaries, large company fringe benefits, appropriate relocation expenses and excellent promotional prospects. Please quote G724.

Other opportunities

The client has more opportunities than can be reasonably discussed in a single advertisement, and therefore if you feel you have particular skills or specialism not covered in the above text, our client, would welcome an opportunity of hearing from you. For instance, a person with 5 years solid experience in installing and successfully supporting first time mini computer users and possessing good business knowledge could anticipate a starting salary in the region of £8,000 to £11,000. On the other hand an experienced Analyst/Programmer currently on £6,000 to £7,000, could look to a starting salary of over £8,000 depending on experience. Please quote G724/X.

TO APPLY

Please send a CV, or a ONE PAGE, handwritten or typed, listing of, name, address, age, marital status, home and office telephone numbers, current salary and employer, employment history, including positions held, applications experience, and relevant hardware and software exposure to date, to ANTHONY SPURR, Executive Selection Division, quoting reference number G724/X. Applications are invited from either sex, and will be treated in the strictest confidence.

BIS Applied Systems Limited
York House, 199 Westminster Bridge Road
London SE1 7UT
Telephone 01-633 0866

BIS Applied
Systems

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£12,000 to £15,000 p.a. plus COMPANY CAR

For salesmen with 'get up and go' inherent commission earning, plus a chance of fast career development with a young and successful hardware distributor operating from Central London and Reading. Products include LSI 11 and PDP 11 products and a powerful range of disc drives, magnetic tape units, terminals, printers, communications equipment and special purpose enhancements. The range is second to none in price, performance and reliability.

The market is commercial users, software houses, education, government and research establishments. Meeting the above earnings figure to be easily achieved.

This exciting company are looking for two self-motivated Sales Persons with experience in selling computer hardware. Product training will be given.

If you are in your early to late twenties and want a job where hard and intelligent work brings job satisfaction plus high earnings this is for you.

Telephone or write in confidence to:

Quoting reference No. ACE 3754/2

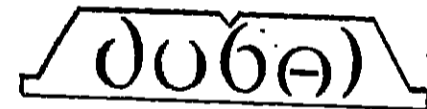
Accord Computer Efficiency LTD

UK Office
Portland House
4 Great Portland Street
London W1N 5AA
Tel 01 637 5001 01 580 3754
Telex 261334 ACE UK

European Office
Serpentstraat 30
1018GL Amsterdam
Tel 020 264664/264082
Telex 10430 ACE NL



DUBAI ALUMINIUM COMPANY LIMITED



Programmer/Analyst Dubai

Dubai is now constructing an industrial complex at Jebel Ali in Dubai, United Arab Emirates, which, by mid-1981, will be producing 135,000 tonnes of primary aluminium per annum and 25 million gallons of desalinated water per day.

Competent people with relevant experience and a taste for demanding start-up situations are required to establish the company's operations on a sound basis. The first pour of aluminium is scheduled for October, 1979.

An experienced Programmer/Analyst, aged over 25, is required to supervise the analysis, design, programming and installation of applications systems as well as to assist in overall systems planning.

Candidates, of graduate calibre, should have spent at least three years in a data processing environment, including a period as an analyst, and have significant experience of on-line computer systems.

Tax free salary negotiable around 80,000 dirhams (approx. 8 dhs. to £1). This is a career position on married or single status and benefits include free furnished accommodation, car allowance and a provident fund.

Please telephone (01-629 1844 at any time) or write - in confidence - for further information and an application form, to P. A. Sandham ref. FY 8803.

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Programmer-analysts with experience of PDP equipment in a Real-Time environment are invited to phone in and find out about the exciting possibilities in Belgium.
Experience of process-control/monitoring or automation systems is an advantage, and particularly if you can demonstrate a thorough knowledge of MACRO II and/or RTL/2.
Ref: DUB/140379

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HOWARD

Programmers

LEEDS - based at Limeswood
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£3860/£5210 per annum plus a
self-financing productivity pay-
ment.

Applications are invited from programmers with at least one year's experience in COBOL.

The successful applicants will join a programming department (about 27 strong) which has an impressive record of producing quality software on time using on-line programming facilities. The work is demanding and stimulating with a wide range of applications under development.

The Board's computer installation comprises a dual ICL System 4.70/4.72 with an extensive communications network and a dual ICL 2972 configuration is scheduled for delivery in early 1980.

Conditions of service are excellent and include:
★ 4-5 weeks' holiday
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Applications, quoting the vacancy number 88/78, should be forwarded to the Secretary, Yorkshire Electricity Board, Scaevill, Leeds LS14 3HE, to arrive not later than 30 May 1979.

Yorkshire Electricity Board

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Manchester 061-833 0427, Blackjacks House, The Parsonage, Manchester M3 2JA

Specialist Computer Recruitment Ltd

Apply by 1.5.79



OCC Computer Personnel Ltd., 16 Bedford Row, London WC1R 4EB.

To apply for any of the jobs below, or for further information, please telephone the Consultant concerned during working hours on 01 242 3006 or write to the above address. If it would be more convenient to telephone in the evening or at weekends, the telephone numbers are: Roger Allington, Bournemouth (0442) 12283; Neville John, Oxford (01865) 52992; Renée Nute, 011 74 4 111.

London Software Sales c £11,000 p.a.

A major UK Software House in West London needs an experienced consultant to sell application packages, software consultancy on mini and micro computers and Turnkey projects.

Candidates may have been selling a service including a package, with an application orientation toward the user market. Alternatively they may have gained marketing experience in a technical consultancy role with a large user, a consultancy or a computer manufacturer.

Ref: 505/CW/Renée Nute.

Systems Controller Warwickshire c £8,000

An engineering company uses a mini computer for a limited range of commercial applications. New systems e.g. production planning and control are now to be developed, possibly with the mini linked to a larger mainframe in the group. The Systems Controller will be whilst having close working links with the Group Systems Manager. The position would suit a senior systems person with some experience in a manufacturing environment. Relocation expenses will be paid.

Ref: 753/CW/Neville John.

Scientific Vacancies From £5,000 +

London N.11 - FORTRAN programmers to work in support role on mini's. Also on-line system support programmers with mini experience in ASSEMBLER or scientific language. Data-comms desirable.

Ref: 164/CW/Fran Setter.

Borehamwood, Herts - Senior Analyst/Programmer to work on development of micro for real-time system. Work would also include support to users and updating of existing systems - must have mini experience and high-level languages.

Ref: 165/CW/Fran Setter.

Cambridge - Project programmers required to work on planning and implementation of overall job design. FORTRAN experience necessary preferably in engineering applications with considerable graphics content.

Ref: 166/CW/Fran Setter.

Hemel Hempstead, Herts - Product Specialist to support variety of software packages in scientific and technical market. Must have minimum of 3 years software support/programming experience, preferably in FORTRAN, CORAL or ASSEMBLER. Must enjoy communicating and travel.

Ref: 167/CW/Fran Setter.



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Compact ICL department working on the latest Point of Sales equipment. Minimum of 12 months' experience. Knowledge of 1500s and System 10 desirable, but not essential as training is available.

Salary negotiable according to age and experience.

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A starting salary of £12,000 p.a. with considerable prospects for advancement, including the possibility of an eventual directorship for a motivated enterprising person.

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University of Petroleum and Minerals, Dhahran, Saudi Arabia is a technical University on the East Coast of Saudi Arabia. It is a member of the United Nations Educational, Scientific and Cultural Organisation (UNESCO). The University is open for its Data Processing Centre.

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Positions are available in both the administrative and processing areas and Academic Computer services. Require minimum B.Sc. Degree and five years experience in at least three of which in IBM/OS environment. Quality assurance experience preferable.

2. SYSTEMS PROGRAMMERS

Require plus 3 years of experience in IBM/OS environment with a minimum of two years in a development environment.

3. TRAINING SPECIALIST

To be responsible for staff development planning, conduct of DP training programme. Require University degree plus DP training experience.

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Planning development and instruction of DP course. Require University degree and DP experience preferably in training.

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University offers minimum regular contract for two years, renewable. Competitive salaries and allowances, free, conditional and furnished housing if available, overseas housing allowance in cash for outside living, and repatriation and from Dhahran each two year tour. Attractive educational assistance grants for school-age dependent children of key staff provided. Local transportation allowance in cash each month. All earned income without Saudi taxes. Ten and half months duty each year with 45 days paid vacation in addition to holidays during the year.

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Broughdon House
6, 7 & 8 Sackville Street
Piccadilly, London W1X 2BR

Principal Programmer

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To £7,182

You will be responsible for ensuring standards are maintained for all programming in a project team and be thoroughly conversant with COBOL and ASSEMBLER languages.

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IBM 370/138 OS/VSE COBOL

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N.W. KENT £5500-£8000

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IBM 370/138 OS/VSE COBOL

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The above constitutes just a few of our vacancies, we have many, many more, so if you are seriously considering a move, whether it be Permanent or into Freelance, and are interested in any of the above positions or have experience on HONEYWELL 66, IBM 360/370, ICL 1900/2903-4/2950-60-70-80, SYSTEM 32/34, BURROUGHS, UNIVAC, PDPs, etc., whether it be in Programming, Analysis or Operations, do yourself a favour, contact: ALLAN BROOKER on 01-637 5001, quoting Reference No. ACE 3754/1.

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Tel: 01-637 5001 01-580-3754
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1018GL Amsterdam
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Junior Analyst/
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Analysts and Analyst/Programmers are required to join the internal consultancy company of this British industrial group. The company's activities include the design and development of advanced and often complex systems, evaluation of software, and advice on the acquisition of computers. Systems are implemented on client companies own hardware or on an in-house computer which provides a time sharing service to smaller companies within the group.

The job offers a variety of work in a stimulating, professional, friendly environment.

The Analyst will deal directly with client management and play a leading role in all phases of the design, development and implementation of systems. Applicants for this position will be all round professionals motivated to solving the real problems of client management. They will have designed and implemented at least one major system preferably in the area of materials and production management.

The Junior Analyst/Programmer will initially play a supporting role but will be expected to develop quickly into the more senior role. Applicants for this position will be similarly motivated and must have played a significant role in at least one system development.

The company has excellent office accommodation close to Wimbledon Underground and Main Line stations. Car parking is also available.

Assistance with relocation is available where appropriate.

For further details including a group report and datasheet, please telephone (24 hour service) and ask for the Managing Consultant, or write to the address below. If you prefer please telephone Bill Theobald evenings or weekends on 01-658 9428. Quote Ref: CW 131-9T.

Positions open to male & female applicants.

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Immediate twelve month contract with our Northern client for the right applicant with GEC 4080 experience in a production control environment.

CENEG.

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Programmer required for ICL Filetab/FTL6 system in a production control environment.

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for experienced Honeywell programmers. Various projects.

CE220

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LANCS £5200 +
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Ref. 1150

SYSTEMS ANALYST

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Ref. 1131

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PROGRAMMERS

THE NORTH CE5500
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FOR DETAILS OF THESE AND OTHER VACANCIES PLEASE CONTACT
JOAN JOHNSTONE ON 061-833 9341/5 (24 HRS.)

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Our client, a small but rapidly developing software systems house requires staff to work on a number of new and interesting projects. The company is involved in all levels of software development — specification analysis, systems design, programming, training. The projects involve many application areas, hardware and operating system software types:

APPLICATIONS: Accounting, Stock Control, Insurance, Production, Word Processing.

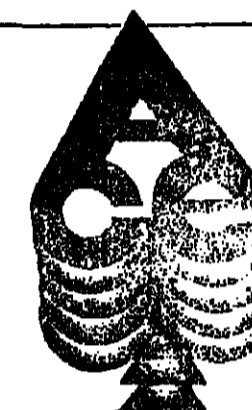
EQUIPMENT: DEC LSI 11, PDP 11, other minis, IBM 370, System 34/38.
SOFTWARE: DEC—RSTS, RT11, RSX using MACRO, BASIC, RPG, RPL. IBM — Various operating systems, COBOL, RPG.

MANAGER: Required to manage ten to twenty staff — requires mature individual who can develop with the company. Will actively control all stages of system design, programming, implementation schedules, training, plus control extensive PDP 11 bureau facilities.

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LONDON W1N 5AA
01-637 5001
Quote reference No. ACE 3754/3



CITY OF SHEFFIELD POLYTECHNIC Department of Computer Services

APPLICATIONS PROGRAMMER

Post No. 240

AP2/3 — £3279-£4148 (including supplement)
The Polytechnic has an IBM 370/135 computer and provides a time sharing service with typewriter and graphics terminals for the Polytechnic, local schools and colleges. A batch service is also provided using OS/VS1. The work will appeal to people who like variety and using their own initiative. Applicants should have a knowledge of a high level language, preferably COBOL or 370 Assembler, but newly qualified graduates or experienced people from non-computing backgrounds will be considered.

Requests for an application form in writing only please to the Recruitment Section of the Personnel Department (Dept. CW), Sheffield City Polytechnic, Hallford House, Fitzalan Square, Sheffield S1 2BB. Completed forms should be returned by 18th May.

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required for Honeywell 64/30 98 Disc installation at Kilmarnock. Easygoder and Cobol and Systems Analysis experience essential. Good remuneration and prospects. Superannuation and life insurance schemes.

Reply, giving details of age and experience, to the Secretary.

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Implementation Officers are responsible for producing user-department Systems Manuals and for training user-department to understand and work with computer systems. Applicants should have plenty of commonsense, a practical approach, and the ability to write in a clear non-technical manner and to deal with staff at all levels. We are looking for someone with experience of computer systems or a person who feels, that given suitable training, he/she would be capable of undertaking this interesting work. Opportunities for subsequent career progression in systems analysis, operations control and administration. For further information, telephone Lyda Hewkissworth (01-874 6464, ext. 367). Otherwise write to: Computer Services Manager, Town Hall, London SW18 2PU, giving your age, education, qualifications and full career details. Closes 1 June.

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Please write to or telephone Mrs. Betty Jones, Chrysler United Kingdom Limited, Whitley, Coventry CV3 4GB. Coventry (0203) 303505 ext. 432.



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Programmers and Analysts with either COBOL, PL/I or Assembler experience on either IBM 370, Univac 1100 or PDP 11 are needed to join Informatics' project teams throughout the U.K. and Europe.

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For expense paid interviews phone Karen Whelan or Gordon Brown on 01-405 8546 (reverse charges accepted).

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Future expansion plans will necessitate a commitment by our staff to the company. In return we will reward individual effort and achievement both financially and career-wise.

Our Managing Director will interview all prospective candidates in London from the week commencing 21st May. All enquiries will be in the strictest of confidence.

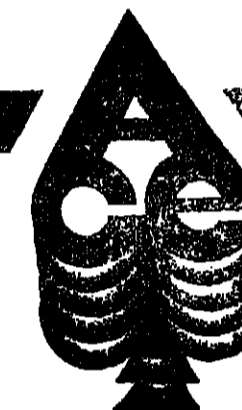
For details, telephone or write to:

Quote Reference No. ACE 3754/5

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A large order from Saudi Arabia for the manufacture and supply of computer controlled telephone systems has confirmed Philips' position as one of the world leaders in this field.

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The development effort extends into the fields of space and time division switching, local and trunk applications, the integration of microprocessors and network maintenance and management centres.

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At least 2 years programming experience is required. Experience on small computers and/or control systems would be advantageous.

Programmers

Applicants should be either recent graduate level or from a course with a large computer content of programming experience in a high level scientific language.

Software Systems Designers

At least 4 years experience in real time or control systems software design is essential. Telephony or Telecommunications experience would be an advantage.

Locations

Malmesbury is situated in the north west of Wiltshire only 5 miles from the M4 and within 1 1/2 hours driving time to London. It is a thriving town of historic interest which also offers all the amenities of a modern community.

Hilversum is located approximately 20 miles east of Amsterdam. The Dutch vacancies can be filled either on a permanent basis or on a three/four year contract basis.

Please ring Malmesbury 2861 Ext. 266 for further details or write with full details of career progression, quoting reference (H.C.), to the Recruitment Officer, Pye TMC Limited, Swindon Road, Malmesbury, Wilt.

PHILIPS

Apply via 1.3.70

UNIVERSITY OF SURREY DEPARTMENT OF MATHEMATICS LECTURER IN MATHEMATICS (COMPUTING SCIENCE)

Applicants are invited for a Lectureship in Mathematics (Computing Science) in the Department of Mathematics. Applicants will be expected to hold a good honours degree in Mathematics or three years' relevant postgraduate experience. Some teaching experience would be an advantage. Applicants should have an active research interest in one or more of the following: Computer Assisted Learning, Combinatorial Computing, Computer Graphics, Microprocessors, Operational Research or Optimization. The person appointed will be expected to engage in teaching and research. Salary will be within the range £22,284-£26,182 per annum (£23,328-£27,182 as from 1st October, 1979), according to qualifications and experience. Further particulars about the post may be obtained from the Academic Registrar, L601 University of Surrey, Guildford Surrey GU2 5XH, or telephone Guildford 71281, extension 462. Applications from men and women in the form of a curriculum vitae, together with the names and addresses of two referees, should be sent to the above by June 15th 1979.

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All classified copy should reach our offices no later than 6.30 p.m. on the Monday preceding Thursday's publication. If complete artwork is supplied 12 noon on a Tuesday. Ring David Abbey for further details on 01-481 8038.

We will shortly require:

SYSTEM ANALYSTS PROGRAMMERS and SYSTEM ENGINEERS

To join our existing team in Europe. Successful candidates will work within an International Environment and participate in the European Space Programme.

Aerospace background preferred but not essential. Experience in either Real Time Computer Applications or Spacecraft Orbit and Attitude Related Fields an advantage.

Salaries and expenses will exceed £15K p.a.

Please send career details to:

Recruitment Officer
VEGA Space Systems Engineering Ltd.
31 High Street
Cobham, Surrey. (09326) 2793

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Barclaycard's latest business developments include providing a complete service for retailers' own credit cards.

The computer system — developed with the BARIC Computer Bureau — will need to progress in response to planned growth and the requirements of individual retailers.

The Project Team requires:

Systems Designer
who will specify the detailed requirements to BARIC and handle testing and implementation.
Commencing Salary: £5,625.

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to work on related aspects of the system.
Commencing salary: £4,018.

Education to a degree level or equivalent is important for the senior position, together with 1-3 years computing experience in a commercial or financial environment.

Fringe benefits normally associated with the Banking industry.

For further information, please apply giving full career and personal details, indicating which post is of interest to:

P. E. Kempton, Manager, Staff Administration,
Barclaycard, Northampton NN1 1SG
Telephone: (0804) 21100 extn. 2341

UNIVERSITY COLLEGE, CARDIFF COMPUTER OFFICER

Applications are invited from Graduates for the post of COMPUTER OFFICER in the User Services Group at the Computing Centre, to assist computer users in exploiting the existing computing facilities and later, those of the replacement machine. Applicants are expected to have had several years' computing experience in a similar environment. Knowledge of Fortran and preferably also Algol or Basic, are required, and previous experience in supporting applications Software for general use is desirable.
Salary range: O.R. 1A £4,232-£7,145 or 1B £3,689-£6,108 according to age, qualifications and experience. Duties to commence 9th July, 1979 or as soon as possible thereafter.
Applications (2 copies), together with the names and addresses of two referees, should be forwarded to the Vice-Principal (Administration) and Registrar, University College, PO Box 78, Cardiff, CF1 1XL, from whom further particulars are available. Closing date 31st May, 1979. Reference 1789.

intel FIELD APPLICATIONS ENGINEERS

Intel Corporation, the World's leading manufacturer of Microcomputer Components and Systems have two positions available for FIELD APPLICATIONS ENGINEERS in the United Kingdom. Intel not only offers the opportunity of working with the most advanced and innovative electronic devices and systems, but also an excellent compensation and benefits package (including company car) and a career opportunity with one of the fastest growing companies in the world.

We are looking for individuals with a strong technical background in microcomputer and mini based design, knowledge of both hardware and software, and the ability to express oneself well in technical presentation. These individuals will interface with our customers in the role of design assistance, technical updating and product support. The positions offered are as follows:

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This individual will specialize in technical support of Intel Single Board Computers and Development Systems Products. He should have a strong systems and software background and preferably some experience with microcomputers.

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This individual will be positioned in our Northern Sales Office in Nantwich (Manchester) and will provide general support over our entire product range. He should have several years' experience working in microcomputer based design.

If interested in one of these challenging and rewarding opportunities please respond to **The Applications Manager, Intel Corporation (UK) Limited, Broadfield House, 4 Between Towns Road, Cowley, Oxford OX4 3NB.**

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CHIEF TECHNICAL PROGRAMMER £8000 +

THE POSITION: Involves the overall supervision of an expanding technical section, with specific responsibility involving the Company's Burroughs 88700 mainframe.
REQUIRED: Around 7 years' overall programming experience, including an in-depth knowledge of Burroughs Large Systems (pref. gained in last 3 years). Knowledge of DCALGOL is desirable.

LOCATION: is Mitcham, on the edge of London in Surrey, easily accessible by road or rail from most S. London, N. Kent or Surrey (7 miles London centre; 4 miles Croydon). The Company offers excellent benefits and genuine career potential within the Group.

For more details, ring Jerry Green on 01-734 0582 (24 hr.). Interviews can be arranged rapidly, and will be direct with Scarab.

COMMUNICATIONS/MINI SPECIALIST £7500 +

THE POSITION: Involves specific responsibility in the area of data communications and Scarab's 880 mini-computers, covering all aspects from investigation assignments through to implementation.
REQUIRED: Around 6 years' programming experience, including experience of either Burroughs Large Systems using DCALGOL or Burroughs minis using CMS. Data communications experience is essential.

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DEC TURNKEY SYSTEMS CENTRAL LONDON BASED

This enthusiastic Software/systems House specialises in LSI 11 microcomputers and PDP11 mini computers with sales negotiations in the range £10,000 to £150,000 per system.

A wide range of package software has been developed with installations in Accounting, Wholesale, Retail, Insurance and other areas. The company has experienced analysts and software development personnel, plus extensive demonstration PDP11 hardware giving Sales Executives all the tools necessary to put forward and close software and turnkey system bids.

Applicants must be able to display a sound knowledge of commercial application software with an ability to discuss and demonstrate solutions to potential clients. Experienced Sales people or Software/Systems people wishing to start in Sales will be suitable.

QUOTE REFERENCE ACE 3754/4

IBM SOFTWARE/SYSTEMS CENTRAL LONDON BASED

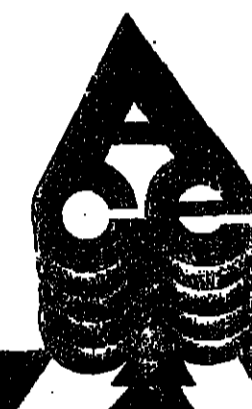
Our client has been involved in application software on IBM 370 systems for many years and is currently becoming involved in System/34 and 38 software.

A quality Sales Person is required to negotiate software contracts in many industry areas, supported by a good technical software team. Knowledge and experience of the IBM market place is essential — the successful candidate may be an experienced software person going into Sales or a Software Salesman with an established track record in Software Sales.

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London W1N 5AA
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KENT

FORTRAN/PLI

TO £7000

This position presents an outstanding opportunity for a Programmer/Analyst to become involved in the exciting oil world. Our client, a major International Organisation, using some of the most sophisticated IBM Hardware and Communication Equipment available, is seeking a Programmer/Analyst to join a small team working in a highly professional environment.

The successful candidate, experienced in Technical D.P. systems, will be required to assist in the development and support of a wide range of scientific applications, relating to our client's refineries and operations in the North Sea using programs and models based on FORTRAN/PLI and specialist packages, MPSX, GPSS, etc.

In particular, applicants are required to have a wide knowledge of linear programming techniques preferably obtained in an MPSX environment. The successful applicant must be able to communicate effectively, and will probably be a graduate in a scientific or numerate discipline. A knowledge of IBM OS is desirable and experience of MAGEN/OMNI would be advantageous.

The company offers first-class conditions which include pension and sickness schemes, free life assurance, subsidised restaurant and sports and social facilities. Reasonably priced housing is available within easy reach and a generous package is offered for those wishing to relocate.

Ref: 952/1705

MYRIAD APPOINTMENTS LIMITED Computer Personnel Consultants
Telephone or write to: 30 Fleet Street London EC4Y 1AA 01-353 0981 (24 hrs)

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The University Computing Service has a vacancy for a programmer of graduate level to work in the systems group. The work involves installation of manufacturers' software on the local machines (ICL 2870 and PDP 11/45), tailoring the systems to local requirements, production of new facilities for users and operators and trouble shooting on all aspects. The group also takes an active interest in communications and microprocessors and is currently working on network control. Experience in these fields is not an essential qualification; more important is a willingness to take initiative and an ability to work without day to day supervision.

The appointment will be in the salary range 1B or 1A, £3689-£7145 per annum. The starting salary will depend upon qualifications and experience.

Further particulars may be obtained from Mrs. P. Vaughan-Smith, The University, Southampton SO9 5NH, to whom applications should be sent as soon as possible. Please quote reference 1071/A/CW

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31st MAY ISSUE

This issue is affected by the Bank Holiday. Copy for this should be sent early to arrive not later than the Friday preceding date of publication. ONLY a small amount will be accepted on each

Tuesday morning. Your co-operation will be much appreciated.

For further details contact David Abbey
Tel. 01-261 8016 Telex Bianspress London 25187

COMPUTER OPERATOR

Salary up to £4,185 p.a.

The Corporation runs a twin ICL 2904 configuration in a multi-programming mode under EXEC+ on a two-shift system. Applicants should have at least 12 months' experience on ICL equipment. The salary quoted includes 16% shift allowance.

Application forms and job description are available from Personnel Section, Level 11, Civic Offices, Civic Centre, Reading or telephone (0734) 56911, Ext. 2032.



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DEPARTMENT OF FINANCE

CHIEF PROGRAMMER

PO1 (1-6) £5727-£8342 (incl.)

We are currently investigating our future computer needs. A vacancy now exists within the Computer Division for the post of Chief Programmer. The person appointed will be a senior member of the investigation team and will be expected to help formulate those needs and evaluate the tenders to meet our requirements. He will also have direct responsibility for programming development, maintenance and software.

Applicants should have at least five years' experience of IBM or ICL programming languages and software and preferably already be in a managerial position.

Assistance towards removal and relocation expenses may be available in appropriate circumstances.

If you are interested please write giving details of yourself and your career to date to: The Director of Finance, P.O. Box 2, Town Hall, Lodge Road, West Bromwich, West Midlands B70 8DY.

Closing date: 31st May, 1979.

BOROUGH TREASURER'S DEPARTMENT

Senior Computer Operator

£4,454-£4,776 p.a. inclusive of Shift Allowance. Ref. B.2283.

Computer Operator

£4,030-£4,351 p.a. inclusive of Shift Allowance. Ref. B.2284.

We require two experienced Operators, the Senior to be a Shift Leader, for our I.C.L. 1902T installation operating under the Geo 2+ system for alternating shifts covering the daily period from 7 a.m. to 9.30 p.m. Monday to Friday only (36-hour week).

Applicants for the senior post should have a minimum of 2 years' experience preferably on I.C.L. 1900 equipment.

In the summer of 1980 the Council will take delivery of an I.C.L. 2900 computer operating under VME/B, for which formal training will be given in due course.

Application forms from the Controller of Personnel Services, Town Hall, Forest Road, London, E17 4JF (Tel: 01-831 8899 - 24-hour answering service).

Closing date: June 1, 1979.

London Borough of
Waltham Forest

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Capital Applications, 28 Woodville Street, London, W1
Telephone 01-257 5551 (evening) 01-257 5552 (day)

LECTURER IN COMPUTING AND MATHEMATICS

Applications are invited for the above post at the NATIONAL COLLEGE OF AGRICULTURAL ENGINEERING SILSOE, BEDFORD (a School of Cranfield Institute of Technology)

The duties will involve teaching computing and mathematics in undergraduate and postgraduate courses in agricultural engineering and related fields. The successful candidate will be called upon to advise and help staff and students in programming and the use and development of the computing facilities. Candidates should have a first degree in mathematics, computer science or engineering. Some experience in teaching and/or computer applications would be an advantage.

The appointment will be made at an appropriate point on the University Lecturer scale: £4232-£8452 p.a.

Application form and further particulars from:



Head of Administration
National College of
Agricultural Engineering
Silsoe, Bedford MK45 4DT
Tel. Silsoe (0525) 604228

Derbyshire Building Society

require the following staff
ANALYST/PROGRAMMER
Salary Range £4,400 - £5,400

A minimum of five years' experience in programming. Although some analysis knowledge would be an advantage, the position would be suitable for a senior programmer wishing to further his or her career.

PROGRAMMERS Salary Range £3,000 - £4,000

A minimum of two years programming is essential.

All our systems run on an ICL 1901T, are disc based and have extensive in-house V.D.U. enquiry facilities.

Future development plans are under discussion and it is likely we shall be moving to the 2900 range and installing remote counter-top terminals.

Programming is carried out in COBOL and, although not essential, a knowledge of PLAN and experience with GEORGE 2 would be an asset.

These positions are all located at our new Head Office in Duffield, which is five miles from Derby. Salary will depend upon experience and qualifications. We offer an excellent package of employee benefits including a staff mortgage scheme and a first class working environment.

The successful candidates will join a small but lively team and will need to be flexible and capable of working on their own initiative.

If you feel that you have the qualities to join an expanding organisation with assets of £230 million, and over 200,000 members' accounts, please write for an application form to:

Peter R. McMillan,
Personnel & Training Officer,
Derbyshire Building Society,
Duffield Hall, Duffield, Derby DE5 1AG.

The Derbyshire
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CHIEF PROGRAMMER

IBM INSTALLATION
SOUTH EAST LONDON
TO £8289

You will be responsible for maintaining standards for all programming and therefore need to be conversant with COBOL and ASSEMBLER languages. New Projects schedule include On-line Financial and Property Information Systems. A sound knowledge of systems programming including PDP-11 computers would be an advantage. Degree level qualifications are desirable.

Come and join a progressive organisation based in modern premises at Catford, consisting of some 60 development and operations staff utilising IBM 370/138 supported by distributed Olivetti, Plessey and Radion processors. We offer good career prospects, a competitive starting salary, optional flexitime, in excess of five weeks' leave and a thoroughly professional DP environment. Good public transport facilities and free car parking available.

For further details ring our Systems Manager, Mrs. L. Harris, on 01-860 4343 Ext. 88, or send full personal and career details to her at Lewisham Town Hall, Catford SE26 4RU.

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Our success in the last six years has been achieved using two important elements. One, a top range of products and back-up facilities and two, by employing only the most experienced and ambitious people in the business.

The inherent enthusiasm and team spirit within the company has enabled us to develop a highly efficient and profitable organisation in which individual talent and drive can earn just rewards.

We are looking for:-

SENIOR ANALYSTS ANALYSTS/PROGRAMMERS

in
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with good commercial experience in a wide range of applications.

If you have a good knowledge of business systems and/or production control and wish to develop and extend your ability to the full, Systime is the company to work for. Real opportunities exist for you to increase your responsibilities and income.

We offer attractive salaries, bonus scheme, car allowance and a comprehensive benefits package.

Interested? Then contact Chris McDonnell on
Leeds 707411 or write with brief details to:

Systime Limited.,
Concourse Computer Centre
432 Dewsbury Road
Leeds LS11 7DF.

SYSTIME

THE CITY UNIVERSITY

Department of
Systems Science
**DEPARTMENTAL
COMPUTER
MANAGER**

The vacancy is for a person (male/female) to manage and co-ordinate the entire range of computing facilities within the department, including minicomputer systems with interactive graphics, on-line process control systems and micro-processors.

Applicants should preferably have both software and hardware experience of minicomputers and will be required to assist with the interfacing and operation of the computer facilities. Knowledge of PDP-11 computers would be advantageous. Degree level qualifications are desirable.

Salary will be on the Scale £4232 to £7145 p.a. plus £502 p.a. London Allowance.

Application forms and additional information can be obtained from the Personnel Officer, The City University, Northampton Square, London EC1V 0HB (Tel. 01-253 4389, ext. 324).

HARLOW ESSEX COLLEGE

College Gate, The High Harlow (Tel. Harlow 20131)
DEPARTMENT OF
MATHEMATICS AND SCIENCE

LECTURER GRADE I in MATHEMATICS and COMPUTING

Applications are invited from suitably qualified candidates for the above post to be filled from September 1979. The lecturer is required to teach modules for GCE O level and H.C.E. Engineering courses together with computing for the 1st and 2nd years of the H.C.E. Hons degree in the field of computing & electronics.

Salary scale: £5,192-£7,411 (plus £160 London fringe)

Application forms and further details obtainable from the Principal

INTRODUCTION TO MICROPROCESSORS IN ENGINEERING

A one day course
30th May, 1979

Course fee: £30 incl. lunch

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Thames Polytechnic
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Tel. 01-854 2030, Ext. 411

Slough Corporation

FINANCE DEPARTMENT Computer Manager / ess

£6774-£7491 p.a. inc.

Applications are invited from persons experienced in a wide range of computer applications and with previous supervisory experience.

The Council currently operates an ICL 1900 system, mainframe but the introduction of the next generation of hardware is currently under review. The successful applicant will play a key role in this review in well as creating and implementing a development programme which will take computing at Slough into the 1980s.

We offer excellent conditions of service including 35-hour week with flexible working hours and 22 days annual leave. Removal expenses and generous resettlement allowances are payable in appropriate cases.

Application forms available from: Personnel Officer, Town Hall, Bath Road, Slough, Tel: Slough 224440

Closing date: 1 June, 1979

Reply in confidence to Box 1022, Computer Weekly

REDIFON PROGRAMMERS

A software company wishes to compile a list of currently active freelance programmers in Southern England.

Reply in confidence to Box 1022, Computer Weekly

THE RANK ORGANISATION PRESENTS



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FOR DOS OPERATORS

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Film distribution and exhibition are just two of the many varied activities of the Rank Organisation for which services are provided by the Computer Centre based at Whyteleafe in Surrey.

The Centre operates a one megabyte IBM 370/138, running under DOS/VS and POWER/VS, supporting an expanding TP and RJE network. Resulting from this development of facilities a vacancy has occurred for a

SENIOR or COMPUTER OPERATOR to £2650 incl.

Our clients are willing to consider upwards of 18 months operating experience in an IBM DOS environment coupled with a genuine interest in developing your career in computers; opportunities for progression within this area are significant.

A three shift system is worked from Monday to Friday, and in addition to an excellent salary package, first class benefits are available. These include reduced rates on hotels and holidays, discount on company products such as Wharfedale HiFi, Pentax cameras, TV and radios etc., plus 4 weeks holiday, staff restaurant and paid overtime.

NOT THIRTY NINE STEPS, ONLY ONE STEP! If this opportunity is of interest to you — then you need take only one step and that is to contact REX SCOONES at Capp Associates CROYDON office quoting ref: CW 138-95

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PERSONNEL
CONSULTANTS



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CROYDON, SURREY



Systems Analysts

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MID-MIDDX. to £7,000

Get totally involved in redesigning, virtually from scratch, all the company's applications for a large Electronics subsidiary of this international organisation. Some of the systems, which will be running on their sophisticated H68 computer, will use the latest DATABASE techniques. With 2 years' or more systems experience (any machine) you will share in the following excellent benefits — removal of pension, flexitime, CPS, 4 weeks' hols, and subsidised canteen serving great food. CW 20/22.

SYSTEMS ANALYST

WELWYN GARDEN CITY
to £7,600

An international pharmaceutical organisation with a major investment in the latest IBM DOS/VS CICS DL1 installation requires a systems analyst with a proven record of systems implementation to work on a variety of business systems. Make a real contribution by joining a company with excellent in-house training and offering relocation expenses, CPS, 4 weeks' hols, and free BUPA. CW 20/25

SENIOR SYSTEMS ANALYST

MID-SURREY £6,500

Why not join a company based in a lovely part of Surrey? This major household product manufacturer has a large and sophisticated IBM system and has on order the latest IBM 4341 computer. A senior commercial analyst is needed to work on a range of new sales accounting and on-line order entry systems. Along with relocation expenses, other company benefits include CPS, 4 weeks' hols, annual bonus and active Sports and Social club. CW 20/28.

3 SYSTEMS CONSULTANTS

C. LONDON
£7,000 + PROFIT SHARING
+ CAR

A small but active software house based in SW London needs 3 systems analysts for the following major applications. The first analyst needs to have ICL 2903/4 or 1900 GII experience of 4 years or more, to work on a major financial application. The second needs to know the 2980 machine as this involves an interesting MIS conversion and 'upgrade' from an existing ICL 1900. The third consultant should have stock or production control experience for an ICL 2980 under VMEB, using TP and IDMS. All three vacancies offer attractive working conditions including 4 weeks' hols, and 8 months' sick pay. CW 20/20.

SYSTEMS ANALYST

MID-MIDDX. to £7,250

Our clients, who are a major garment manufacturer with an advanced IBM 370 DOS/VS installation, require a systems analyst who can contribute experience in the manufacturing or commercial systems area. The company uses screen coding and interactive programming as part of its advanced approach to computing, and a career with them would be highly beneficial. Perks include CPS, 4 weeks' hols, a subsidised canteen and staff purchase scheme. CW 20/23

SYSTEMS ANALYSTS

N. LONDON to £7,000

One of the most famous Finance houses in the country using IBM mainframes, is seeking young systems analysts wishing to enlarge their previous 2 years' systems experience and work on a variety of financial, reporting and MIS applications. Being a large but friendly company with first rate offices and facilities they can offer 4 weeks' hols, Non CPS and subsidised canteen. Your particular machine experience is not important, neither is a programming background essential. CW 20/28

SYSTEMS ANALYST

MID-SURREY £6,000

This vacancy is for the above mentioned company with latest IBM 4341 computer on order. The post of systems analyst could suit an analyst programmer who wishes to progress into straight systems design. Here a manufacturing background would be an advantage, with a minimum of 3 years' DP experience. CW 20/29

JUNIOR AND SENIOR CONSULTANTS

£ NEGOTIABLE CENT. LONDON

Six large, well-established consultancies wish to recruit systems people with 20-round experience on third generation equipment and the right personality to deal with clients who require first-rate service. Technical Communications Consultants are also required where in-depth implementation experience of IBM or DEC latest ranges essential. Excellent fringe benefits and prospects. CW 20/21

SYSTEMS ANALYST

W. LONDON to £7,000 + CAR

A car manufacturer of world renown wishes to recruit a qualified systems analyst to enhance and develop manufacturing and commercial systems on their IBM and DEC real-time installations. Programming background is an advantage but the major requirement is an ability to see a project through successfully. Company benefits include relocation expenses, flexitime, an excellent subsidised canteen, 4 weeks' hols, and an attractive bonus scheme. CW 20/24.

SYSTEMS ANALYSTS

N. LONDON to £6,500

Our clients, based in N. London, are one of the most successful manufacturing and exporting companies in the UK. Being manufacturing oriented they have a variety of systems on their IBM 370 which incorporate the use of DL/1 and IBM's CQPCIS. If you are interested in this side of DP and want a job with a future, contact us now. They offer relocation expenses, CPS, 4 weeks' hols, and an annual bonus. CW 20/27

SYSTEMS ANALYSTS

SLOUGH £6,500 to £8,000

Join this growing internal services department of a major household and industrial products organisation. Having the latest ICL 2904 plus Olivetti, mini-computers, this company can offer a really great future. A manufacturing background would be advantageous without necessarily having programming experience. Perks include relocation expenses, 4 weeks' hols, CPS, and a subsidised canteen. Full training will be given and promotional prospects are excellent. CW 20/30.

Recruitment Consultants

UNIVERSAL COMPUTER ASSOCIATES LIMITED

01 995 3883 (01 958 6138 Evenings)

Data Express House, 3 Prospect Place, Heathfield Terrace, Chiswick W.4

April 1979

Consultants + Systems Analysts

A very prestigious client has several openings in their London, Cheshire and Dutch offices for Consultants and Senior Analysts with 5-9 years experience of either Real-time Mini systems or Data-base/on-line Main-Frame Applications.

Openings exist in both the Commercial and Technical/Scientific divisions, the only pre-requisite being depth-of-experience. Whilst a degree in Computer Science or related subject is an advantage our client is placing greater emphasis on actual achievement.

A very attractive remuneration and benefits package is being offered which together with the prestige of association with this foremost company offers an unparalleled career opportunity.

U.K. salaries will be in the range of \$7.5-£12.5K and overseas salaries approximately 60% higher. Interviews will be held in Central London and Cheshire as soon as applications are received.

**£7.5-12.5K
+ CAR**



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COMPUTER CENTRE
Due to the expansion of the
Computer Centre and in
order to prepare for the
replacement of the current
ICL 1903S computer there
are vacancies for:

**2 TEAM
LEADERS**
£6,727-£8,080 OR
£5,727-£6,342

**3 SENIOR
PROGRAMMER/
ADVISERS**
£5,232-£5,888 OR
£5,727-£6,080

AND
**2
PROGRAMMER
ADVISERS**
£4,248-£5,073

Applicants must have a degree or have a graduate equivalent status in mathematics, computer science or other relevant discipline. Have at least two years' post graduate experience (four years' for the Team Leader posts) of programming in a scientific, technological or commercial field, preferably in a variety of computer languages. Applicants for all the above posts should be full members of a relevant professional organisation. For application form and job specifications please apply in writing enclosing a large stamped addressed envelope to the Personnel Officer, Lanchester Polytechnic, Priory Street, Coventry CV1 5PS returnable by Friday, 8th June, 1979.

For application form and job specifications please apply in writing enclosing a large stamped addressed envelope to the Personnel Officer, Lanchester Polytechnic, Priory Street, Coventry CV1 5PS returnable by Friday 8th June, 1979.

UNIVERSITY OF CAMBRIDGE COMPUTING SERVICE

The University of Computing Service has vacancies for two **COMPUTER ENGINEERS** to join a team responsible for the maintenance of mini-computers and associated peripherals within the University. This is a small team which is being expanded to look after a wider range of systems, and the work is varied and challenging. Relevant qualifications and good experience are essential, since the procedures used go far beyond normal first-line maintenance practices. Appointments will be to offices of Computer Engineer in Grades II or Grade III on salary scales between £3,384 and £5,367 (plus USS benefits). These scales are under review. Further details may be obtained by telephoning Mr. Barton or Mr. Cox on 0223-52435. Applications in writing (including a statement of age, qualifications and experience and the names of two referees) should be sent to the Director of the Computing Service, Com Exchange Street, Cambridge CB2 3QG by the 8th June, 1979.

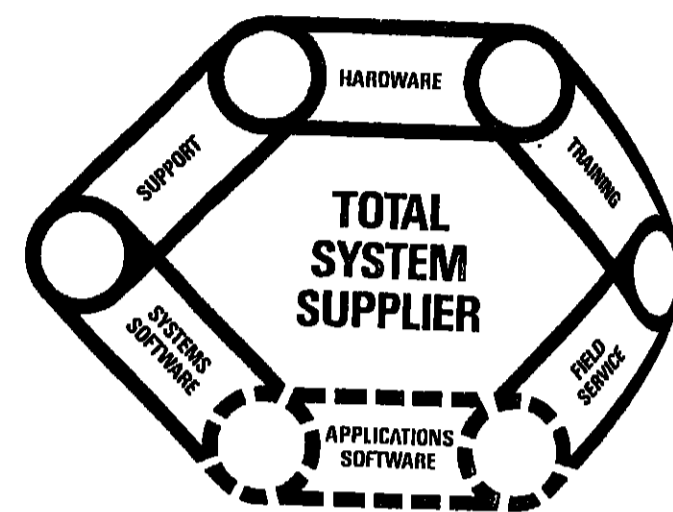
UNIVERSITY OF LIVERPOOL DEPARTMENT OF PHYSICS

GENERAL ASSISTANT

Active and intelligent person, preferably over 50, to assist generally with running Department's computers. Training provided as necessary. Normal hours of work 9.00 a.m. - 5.30 p.m., Monday-Friday. Salary within range to £3,032 p.a.

Application forms may be obtained from The Registrar, The University, P.O. Box 147, Liverpool L69 3BX to whom they should be returned as soon as possible. Closing date: 14th June 1979.

A programme for your success in helping us to forge this link £4K-£8K: Hemel Hempstead



We are:
CTL, the fast growing British Computer Systems and Software Company. Expanding rapidly, with another year of record sales, thanks to customers ranging from commercial and industrial organisations to public bodies and government departments.

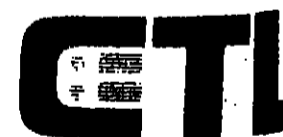
We aim:
To build on this success by continuing to place emphasis on providing a comprehensive systems service to customers, for both hardware and software.

We need:
Programmers with experience of COBOL
Analysts/Programmers
Systems Designers.

You should:
Enjoy working in a project environment that gives total involvement in systems design through to implementation and acceptance.

We offer:
Salary up to £8K (dependant on ability and experience)
Attractive career prospects
Generous re-location expenses where appropriate.

To find out more please telephone Nigel Doo or Nigel Vine - Applications Software Development Group - on Hemel Hempstead (0442) 3272 or alternatively write for an application form to Jim Parlo, Personnel Office, Computer Technology Limited, Eton Road, Hemel Hempstead, Herts HP2 7BQ.



The British Computer Systems and Software Company

Systems Programmer

Addlestone, Surrey.

An opportunity exists for a Systems Programmer to join the system support team in our Computer Centre at Addlestone. The work involves research and analysis within the operating system. The Centre provides a 24 hour bureau service to the Company on its ICL 1900 computers running under George 3. The configuration comprises a 354K, 1906S and a 256K, 1906A, also a 2960 running under DMR, RJE, MOP and TP services are provided.

Applicants should be fluent in a major programming language and have some systems experience. A knowledge of George 3 would be an advantage. Large company benefits include a subsidised restaurant and an active Sports and Social Club. Please write with brief details or telephone for an application form: Peter Steiner, Recruitment Manager, Plessey Radar, Addlestone, Weybridge, Surrey TW20 9WY (0933) 47982.



PROGRAMMERS

Sheffield to £5000

A well known Sheffield company has vacancies for COBOL programmers.

Current projects include major new developments in the areas of manufacturing, order processing and financial systems. On-line and database techniques are in use involving VDU's on both a local and remote basis.

Hardware installed is an IBM 370/148 and an IBM 4341 is on order.

Candidates must have 18 months COBOL experience which can be on any mainframe although previous experience in an IBM environment where CICS is in use would be an advantage for some of the vacancies.

Contact Ivor Norton quoting reference CW/79029.

Ivor Norton Management Services Ltd
Recruitment Consulting Division

52 Shaftesbury Avenue, London W1V 7DE. 01 734 8862 (24 hour answering service)
P.O. Box 83, Copthall Tower House, Harrogate HG1 1TS. Tel: Harrogate 66628

Computer Operators

Up to £5,500 (inc. Shift Allowance)

The Society is seeking applicants in the age group 20-35 years who have gained a minimum of four GCE 'O' level passes including Maths and English Language. The successful applicant will have at least 2 years experience of working in a Computer Operations environment and will form part of a team manning the Society's new UNIVAC 1100/80 series machine installed in its Computer Centre in the Baker Street area of London.

The position will entail shift work for which a substantial allowance is paid. Other benefits include modern catering facilities, contributory pension scheme, BUPA membership, life assurance and special staff mortgage facilities.

For application form please write to:
Faith Wakefield, Senior Personnel Officer, Personnel Department,
Abbey National Building Society, Abbey House, Baker Street,
London NW1 6XL.

ABBEY NATIONAL

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31st MAY ISSUE

This issue is affected by the Bank Holiday. Copy for this should be sent early to arrive not later than the Friday preceding date of publication. ONLY a small amount will be accepted on each Tuesday morning. Your co-operation will be much appreciated.

For further details contact David Abbey

Tel: 01-261 8016

Telex Bienespress London 25137



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We are currently seeking ANALYSTS and CONSULTANTS with significant experience of commercial applications, preferably related to IBM equipment, to join the commercial applications group within our own PROFESSIONAL SERVICES DIVISION. This team has doubled in size during the past year and opportunities for advancement into management continue to be generated.

Successful candidates will be given opportunities to:-

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- Visit clients
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- Provide sales support
- Work on differing mainframes including IBM3031

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MORE THAN A COMPUTER COMPANY

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Up to £5,000 p.a.

We require competent Operators to work on our installation of two 1904Ss and two 2980s, with numerous peripherals including on-line equipment.

To join these teams operating a shift system covering Monday to Saturday (34 hour average four day week) you should be aged over 19 years, with a minimum of 1 years experience on ICL 1900 series or some 2980 experience.

A salary of up to £5,000 p.a. is offered, inclusive of shift allowance.

Benefits include relocation expenses, house purchase scheme, four weeks' annual holiday, non-contributory pension, free life assurance, luncheon vouchers, 24 hour staff restaurant etc.

For further details and an application form telephone Jackie Voss on 01-982 2333, or write to her at:

Bankers Automated
Clearing Services Limited,
3 De Havilland Road,
Edgware, Middlesex.



£5,000 p.a.

JBA

European Technical Support Manager Amsterdam

The European Marketing Centre of one of the world's leading manufacturers of information display and graphic systems wish to appoint a Technical Support Manager.

The successful candidate will liaise between the marketing centre and subsidiary companies (and distributors), assess all product parameters with respect to market demands and make relative and comparative studies on competitive products. Conventional management responsibilities will form a large part of the job, together with providing assistance and guidance to product support managers, sustaining a highly efficient technical support service and keeping in close contact with all hardware and software technology.

Applicants must have a technical degree (or equivalent) plus over six years software engineering experience with minicomputers and mainframes in systems software and FORTRAN based applications. At least two years direct management experience of a medium sized group in marketing support, software maintenance or project development is sought. English fluency essential and another European language desirable but not mandatory.

Very attractive salary and benefits, including relocation package.

Contact: Mike Creamer

JAMES BAKER ASSOCIATES,
International Personnel Consultants,
16 Maddox Street, London W1.
Telephone: 01-491 4478.

INTERNATIONAL AMERICAN BANK COMPUTER AUDIT

We are a major American Bank, long established in London. Presently we are expanding our activities considerably Worldwide and particularly in Europe.

Large data processing projects are currently being developed and more are planned in London, Europe and the Far East. The equipment is mainly IBM 370 and IBM System 3/32/34.

As a result of this expansion, the International Audit Department wish to recruit a young man or woman, to join the Computer Audit team. The position will suit a self-motivated programmer, in their mid-twenties with at least 2 years' experience of COBOL Programming under DOS/VS (preferably in a banking environment), who wishes to develop their career by moving into the fast expanding field of Computer Auditing.

The post affords the opportunity of working with various Computer Systems, both in London and Overseas, and offers excellent training to keep the candidate at the forefront of Computer technology.

Generous fringe benefits include:

- ★ Low interest mortgage and personal loan facilities
- ★ Free lunches, BUPA contribution and life assurance
- ★ Interest-free season ticket loan
- ★ Profit sharing
- ★ Non-contributory pension scheme

For further information please write or telephone Richard Newcombe, Manufacturers Hanover Trust Company, International Audit, 2/3 Curator Street, London, EC4P 4BB. Telephone: 01-405 1865.



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OR WRITE TO US IN CONFIDENCE AT
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Principal Computer Operator

Philips Research Laboratories require an experienced Operator to join a small team in the Computer Department.

The Department runs a computing service for scientists and engineers involved in many varied areas of research. It is based on two ICL 1904S processors, using a special version of George III which allows both to access the same file store. A DIGICO 1603 front end connects 38 terminals. Later in 1979 an SEL 32 computer system will be installed to do CAD of integrated circuits.

The person chosen will be involved in all usual aspects of operating, and will also be

required to assist and deputise for the Computer Operator in organisational and technical matters. Consequently, several years' 1900 and George III experience is essential, together with a technical knowledge of communications equipment. The ability and flexibility to learn about systems is also needed. A five-day week is worked, normally 8.30 a.m. to 4.30 p.m. with shift hours (from 2.00 p.m. to 10.00 p.m. in two weeks) from 2.00 p.m. to 10.00 p.m. Please apply to: Mr. M. L. Malpas, Philips Research Laboratories, Cross Oak Lane, Salford, Salford, Surrey. Telephone: 01-544 5144.



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The London office of Europe's leading
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Senior Fortran Programmer

We're ambitious and developing fast in the business of supplying computing answers to daily business problems.

You can share in our dynamic future if you have a minimum of 2 years' Fortran experience in a timesharing environment.

The applications are mainly Financial, using DEC and SIGMA operating systems. You will be responsible for one other

programmer and some systems will be involved.
Initial salary up to £5,200 pa

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01-242 0747,
GSI Limited,
83 Clerkenwell Road,
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UNIVERSITY OF BRADFORD

Computing Laboratory
Computer Officer Posts

Applications are invited from graduates or professionally qualified persons for two posts in the University's Computing Laboratory which operates a large ICL 1904S installation running under the GEORGE 3 Operating System and providing a central service for research and teaching within the University.

COMPUTER OFFICERS

(Ref. CL/CO/CV)

Are required in the Systems/Communications and Application groups. Both posts require programming experience and knowledge of the GEORGE 3 Operating System would be an advantage. Salary on scale 24232 to 27146 p.a.

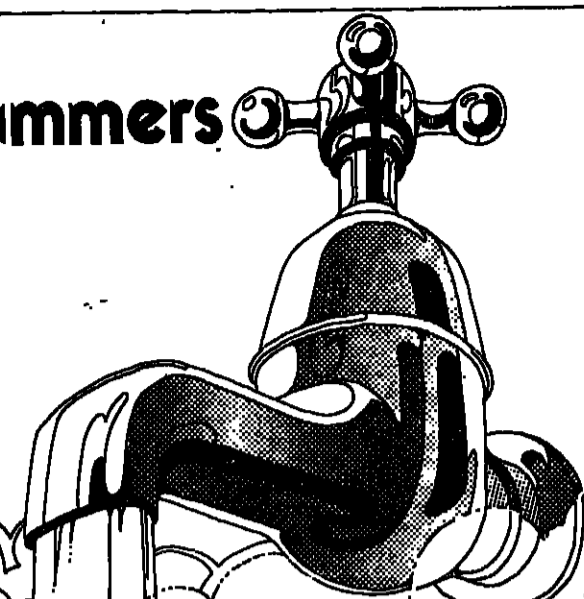
Applications forms and further particulars are available from the Personnel Office, University of Bradford, West Yorkshire BD1 1PT.

PROJECT LEADER SOUTH EAST LONDON TO £7551

New projects scheduled to commence shortly are on-line systems for Finance (including Rent Accounting) and Property Information Systems. Other areas under investigation include word-processing and computerised telephone exchange. Come and join a progressive organisation based on modern premises at Catford, consisting of some 100 staff development and operations staff utilising IBM 370/158 supported by distributed Olivetti, Plessey and Hewlett-Packard processors. We offer good career prospects, a competitive starting salary, optional flextime, in-house training, a leave and a thoroughly professional DP environment. For further details ring our Systems Manager, Mr. J. Harris, on 01-890 4343 Ext. 66, or send full CV and career details to her at Lewisham Town Hall, Catford, SE13 5BU.

LONDON BOROUGH
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Analysts & Programmers



Why Britain's biggest process industries need to tap your talent

Turn on a tap... fill up with petrol... take an aspirin: the chances are you'll be using the end product of Kent process control technology. Kent Automation design, manufacture and market computer-controlled systems to increase accuracy and efficiency in most of our biggest process industries: water and power, oil and metals, chemicals and pharmaceuticals. As an analyst or programmer with us, you would spend a good deal of time with companies like these - on their premises, both around the UK and overseas. You'd be pitting your wits against the unique and complex problems of software design and application for these large high-technology systems, which are powered by our own ranges using PDP8 and PDP11 minis. Most important, you'd be responsible through literally all stages of the project from

system definition to commissioning and beyond

We're a compact, dynamic company relying for our continued growth and success on the talent and expertise of our computer people. The programmers and analysts we are now looking for will be graduates with at least 2-3 years' experience, including exposure to process control; once with us, they are encouraged to develop very high levels of technical and managerial skill and many will look forward to becoming project leaders or software consultants within 2-3 years.

Salaries are a matter for discussion but will certainly be very competitive, and full benefits include relocation to Hertfordshire. If you're interested, then please contact us



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Make the most of your systems design and analysis experience. Pass it on.

As one of the world's top 2 companies in terms of revenue from computers and associated products, we have won a universal reputation for quality and technical excellence. Maintaining this reputation, in the face of fierce competition and unprecedented growth, is very largely the responsibility of the dedicated men and women who make up the unique team of instructors at our Head Office. They compile and control the courses and seminars that ensure that our sales and support personnel are among the most professional in the field. And in return for this considerable responsibility, we not only pay them well above average salaries, we back those salaries with a full range of executive benefits.

We're now looking for someone to join

them: someone with the hard-won practical experience and proven track record necessary to teach both basic and advanced systems analysis/design, project control and management, standards, and structuring. With the added impetus of direct involvement in one of our most rapidly developing areas, your ambition for ever greater responsibility should find all the opportunity it needs for continual progression. First-hand knowledge of NCR hardware and software would be a distinct advantage but is by no means essential. Please write, with brief career details, to: Christine Parkinson, NCR Limited, 206 Marylebone Road, London NW1 6LY. Tel: 01-723 7070.

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Are you currently working as a Consultant or Analyst/Programmer on technically demanding Mini or Micro computer applications? If so our International client would like to discuss a career opportunity with you which they believe (and we endorse) is extremely attractive from the point of view of job interest, promotional prospects and salary potential.

This client is currently engaged in a broad spectrum of technical applications including design and implementation of Mini and Micro based systems for: process control. Real-time communications, message switching etc. Much of their work is of a pioneering nature and will appeal to those less interested in re-inventing the wheel and more interested in innovation.

A comprehensive package is offered including full relocation expenses, provision of initial accommodation and re-settlement advance. Ideally, you will be either a graduate in Computer Science or other related discipline or have considerable experience in lieu. In any event you will certainly be offered a salary in line with your achievements and potential. Expect to talk in the salary range of:

£10-18K



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